NLynx Technologies
Connecting Made Easy

ES/PCI

Twinax Emulation Card and Emulation Software

User's Manual

Complete Midrange Solutions

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Connecting people and information

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Chapter 1

INTRODUCTION

ES/PCI is a hardware/software package that connects your PC to IBM Midrange computers.

The hardware component is the PCI adapter, which plugs into an expansion slot in the back of your PC. The PCI adapter supports standard twinax cable connections through an on-board D-connector and a T-connector, included in this package.

The hardware driver is the software component that provides Windows with the information to support the actual hardware.

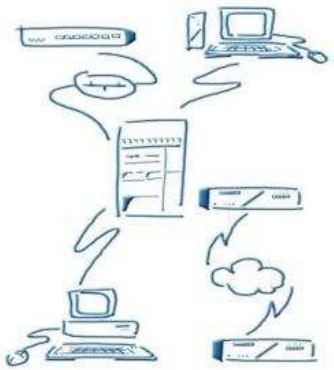
The software portion of ES/PCI is the Emerald Series emulation software. The software is included on the enclosed diskettes.

PC Requirements

- IBM PC (or compatible) with 486, Pentium®, or higher processor,
- CD-ROM drive,
- Hard drive with 6MB available,
- A minimum of 4 MB of available memory,
- Windows 98, NT 3.51 (or above), 2000 or XP,
- One PCI free slot according to the following minimum specification:
  - Data Bus speed: 33MHz
  - Data Path Width: 32 bit

PCI Features

- Compatible with PCI specification version 2.1.
- There is no need to configure memory and I/O address during installation.
- The adapter supports, automatically, the entire range of interrupts (IRQ 3-15).
- Supports 7 sessions and 7 addresses using Emerald Series emulation software.
- Nine display station models and thirteen printer models from which to choose to emulate.
- Communicates with IBM S/36, S/38, Advanced Series 36, and AS/400.
- 32-bit Emulation Software included. Setup detects the PC operating system and installs the appropriate emulation.
- With the emulator, you can:
    - Open multiple host sessions at any one time and work with those sessions to run host applications;
    - Emulate a variety of host display stations and printers;
    - Customize the IBM host screen to fit your needs by changing the screen colors, the font, the shape of the cursor, and other features;
    - Use HotSpots to enact host menu items and commands by clicking on them with the mouse;
    - Assign many IBM host functions to your PC's keyboard;
    - Automate host procedures by recording macros. You can play back the macro any time you want to perform the procedure;
    - Copy IBM host screens to the Windows clipboard. From there you can paste them into PC applications or other host applications;
    - Copy tabular data from the IBM host to PC applications, such as spreadsheets;
    - Use ETU to transfer files between the IBM host and the PC. ETU is a file transfer utility, available from NLynx Systems.



ES/PCI Card Technical Specifications

- PCI version 2.1
- Power Requirements . . . . . +5, +12 volts
- Emulation 5250
- Signal Strength. . . . . 5000 feet (Twinax)
- Signal Strength. . . . . 15 – 500 feet (CAT5 & baluns)
- IRQ and Memory . . . . . Auto (Plug and Play)
- ES/PCI card part number 00-31-9607-000
- ES/PCI cable assembly, T-connector, twinax-DB15M 07-351908501
- ES/PCI emulation software 63-373680901

INSTALLATION

Preparations

If neither ES32 nor the Twinax Adapter was previously installed, you can start at the next section. Otherwise, we recommend **removing all** previous versions of ES95 (or ES32) from the computer, by using the uninstall utility found in the ES95 (or ES32) folder and deleting the physical driver files from the PC. This will prevent Windows from reinserting an incorrect hardware driver.

1) Click the Windows **Start** button.

2) Select "**Programs"**, then the **ES32 (or ES95)**, and then finally "**Uninstall"**.

3) You should also uninstall the hardware from the Device Manager. (If the Twinax Adapter hardware was been done before, and the driver chosen was wrong, then you must uninstall.

4) Go to the Desktop, and right-click on "**My Computer**".

5) Select "**Properties**", which will bring up the **System Properties** window.

6) Select the "**Hardware"** tab, then select the **Device Manager** button.

7) First look for "**Twinax Adapters"**, if it does not exist, then look for 'PCI Simple communication device', or a card that you do not recognize in "Other".

8) Click on the "**+**" next to Twinax Adapter to show the devices in this group. Click on "**NLynx PCI Twinax Adapter**" to highlight it. Select the **Action** menu and then '**Uninstall…'**.

9) Use the Windows Search (For Files or Folders) or Find to look for the **PCITwin.VxD** or **NLTwinax.sys** and delete them, wherever you find them.

Installing The ES/PCI Adapter

There are three steps to successfully installing the ES/PCI adapter card when used together with the ES/PCI software from Ringdale, Inc. Systems:

- Install the ES/PCI adapter card in your PC
- Attach the T-cable (sometimes called "the pigtail") and twinax cable (or balun and CAT5) wiring to the ES/PCI adapter card
- Installation of the ES/PCI software

Each of the above steps is described below.

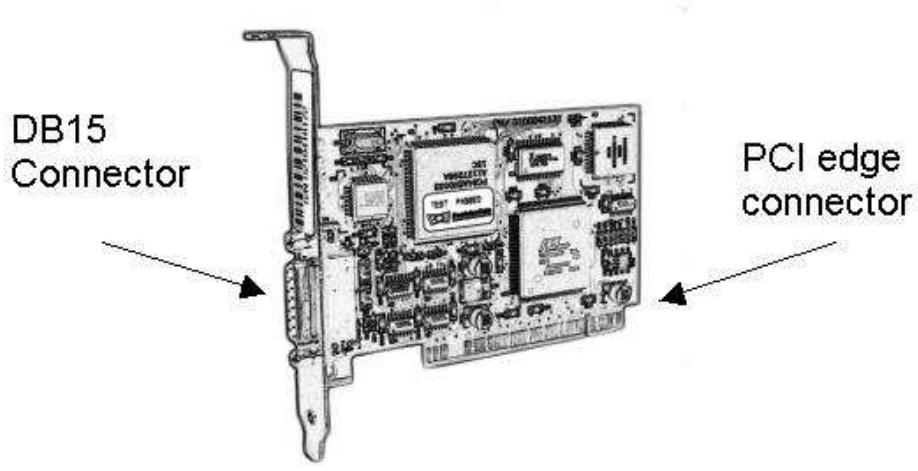
NOTE: Adapter cards are extremely sensitive to static electric charges. Be sure to discharge your body's static electricity by touching a grounded surface before handling an adapter.

Installing the Adapter

1. Switch off all computer system components, unplug the computer, and remove the computer cover.
2. Work in a static-free area and touch the computer chassis often to equalize static charges.
3. Insert the ES/PCI adapter card into a free PCI slot. The PCI slots are white or cream-colored. The 15-pin D-connector should protrude through the rear of the PC chassis.

4. Align the adapter and retaining bracket and tighten the screws to the retaining bracket. It is important to tighten the screws because twinaxial cable is heavy enough to pull the card out of the PCI socket.

5. Replace the cover on the PC.



The ES/PCI Twinax Adapter Card

Connecting the T-cable and Twinax Cables

The following instructions assume that a twinax cable has been cabled-through from the previous terminal on the line or directly from a port on the host system.

In order to attach your PC to the host, you need two cables: an existing host twinax cable and the self-terminating T-cable cable included in your ES/PCI package.

The T-cable cable has two ends: the 15-pin end, called the D-connector, which connects to the adapter card, and the dual-branch end, called the T-connector, which connects to the host twinax cable.

1. Plug the 15-pin D-connector securely into the back of the ES/PCI adapter card.

   To ensure good grounding, fasten the D-connector's mounting screws, making certain the connector is firmly attached to the ES/PCI adapter card.

Attach the host twinax cable to either of the T-connector branches.

NOTE: If you use baluns and CAT5 or CAT6 wiring, you should make certain that the CAT5 wiring is at least 15 feet in length.

NOTE: If you use baluns and CAT5 or CAT6 wiring, you cannot daisy-chain because the impedance will not be unbalanced. Baluns and CAT5 wiring should only be connected in a point-to-point or star topology with a star hub.

2. If you are cabling-through to another terminal farther down the line, attach that next terminal to the remaining T-connector branch. Make certain that the last device on a twinax daisy chain has properly terminated the line.

   Since this is a self-terminating cable, you do not need a cap for the open end of the T-connector.

NOTE: If you are installing multiple ES/PCI adapter cards, repeat steps 1 and 2 for each adapter installed.

You are now ready to power up and install the ES/PCI hardware driver.

Installing the ES/PCI Hardware Driver

Installing the hardware driver is slightly different between the different operating systems. If you do not direct the Windows wizard to the correct driver on the CDROM, Windows may install a default driver that will not work, or not all. With Windows, there is always more than one correct way to install the driver.

If you are using **Win98, Windows Millennium, or Windows 2000**, the driver should be **NLTwinax.sys dated 12/10/2004.**

If you are using **Client Access** on ***any*** operating system, the driver should be dated **5/20/1999** and the driver file should be **PCITwin.VxD**.

If you are using **Win95, or WinNT4**, the driver is **PCITwin.VxD** dated **11/11/1998**, but it shows in the Device Manager as **5/20/1999**, which is the date of the INF file.

Basic Instructions to Install the Hardware Driver

These are the basic instructions to install the hardware driver for any operating system. More complete instructions for each operating system follow.

1) After Windows starts up, the PC should detect the twinax card.

2) The windows Add New Hardware Wizard will appear. Insert the ES/PCI CD into CD drive and follow the Wizard screens.

3) Search for a device.

4) If you get the message "Please insert the disk labeled Win xx Drivers Disk" Click OK and Browse to the ES/PCI CD.

5) Browse to the **INF** folder and then select the folder for your Windows Operating System version.

6) When the message "Copy files from Windows" displays the correct path for the .inf file Click OK.

Windows XP Driver Installation Instructions

1) **Power off** the PC. **Insert** the NLynx ES/PCI Twinax adapter into an available PCI slot on the motherboard.

2) **Power on, insert the ES/PCI CDROM** and logon to the PC.

3) The **Found New Hardware** window will pop up in the bottom right and indicate that it has detected a "**PCI Simple Communications Controller"**. Click on the window anywhere.

4) It should bring up the **Found New Hardware Wizard** dialogue box. If it asks "**Can Windows connect to Windows Update to search for software?"**, click "**No, not at this** time" and then click **Next.** and indicate the **NLynx PCI Twinax Adapter**. Choose the '**Install the software automatically (Recommended)'** option, and then click **Next** again.

5) It will find two drivers on the CD (Windows 98 and Windows 2000). Choose the driver for Windows 2000. Either double-click it, or click once to select it. The path to the driver should be (**D:\INF\WIN2000**) Where D: is your CD-ROM drive.

6) Click **Next**

7) It will install the driver from the CD-ROM and will tell you **"The wizard has finished installing the software for: NLynx PCI Twinax Adapter,"** you finally get the **Finish** button. And you should click it.

Verify the Driver

After installing the driver, you should check it to make certain it is correct.

1) Go to the Desktop, and right-click on "**My Computer**", and select "**Properties**", which will bring up the **System Properties** window.

2) Select the "**Hardware"** tab, and then double-click the **Device Manager** button.

3) Click on the "**+**" next to **Twinax Adapters**. Double-click on "**NLynx PCI Twinax Adapter**" to select it. Select the **Driver** tab. For **Windows XP**, the driver version should be **5.0.1.7.** Click on the **Driver Details** button. The driver should be **C:/Windows/System32/DRIVERS/nltwinax.sys.** The **Driver Date** will say **"Not available"** and the **Digital Signer** will say **"Not digitally signed**."

If you do not have the latest driver, you can get it online at

http://www.nlynx.com/html/tb-espcidrivers.htm

Windows 2000 Driver Installation Instructions

1) **Power off** the PC. **Insert** the NLynx ES/PCI Twinax adapter into an available PCI slot on the motherboard. The slots are usually white or cream-colored.

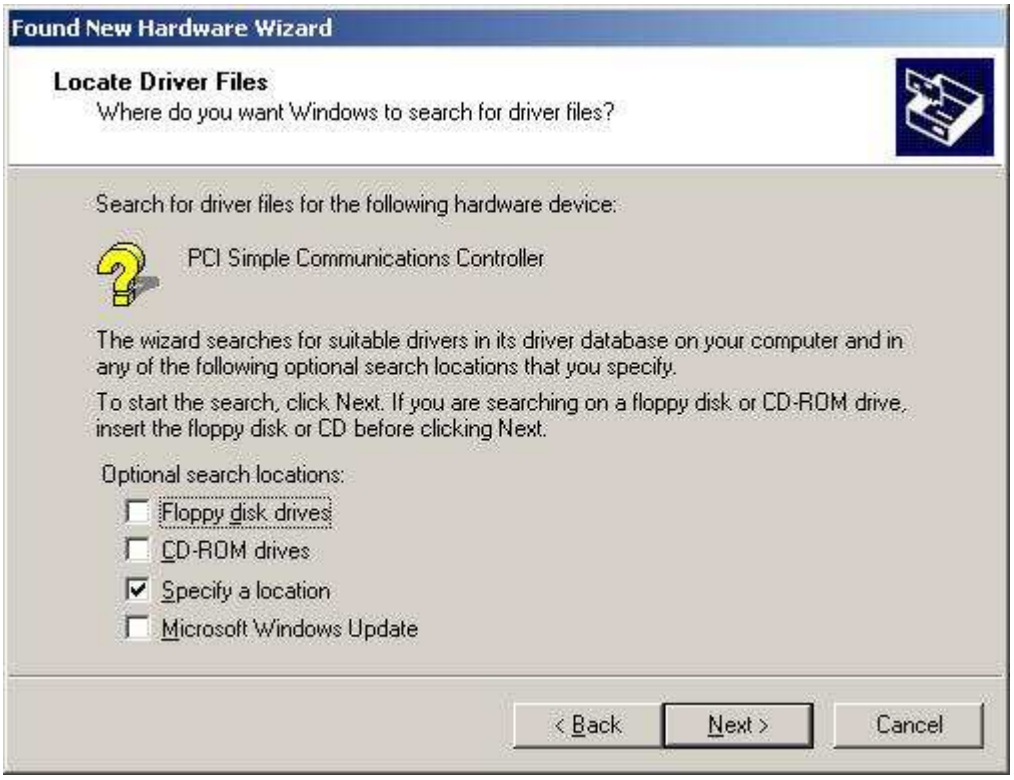
2) **Power on** and logon to the PC.

3) The **Found New Hardware** window will pop up and indicate that it has detected a "**PCI Simple Communications Device"**. Click the **Next** button.

4) It will bring up the **Found New Hardware Wizard** dialogue box, and either indicate the a "**PCI Simple Communications Device"**. Choose the '**Search for a suitable driver for my device (recommended)'** option, and then click **Next** again.

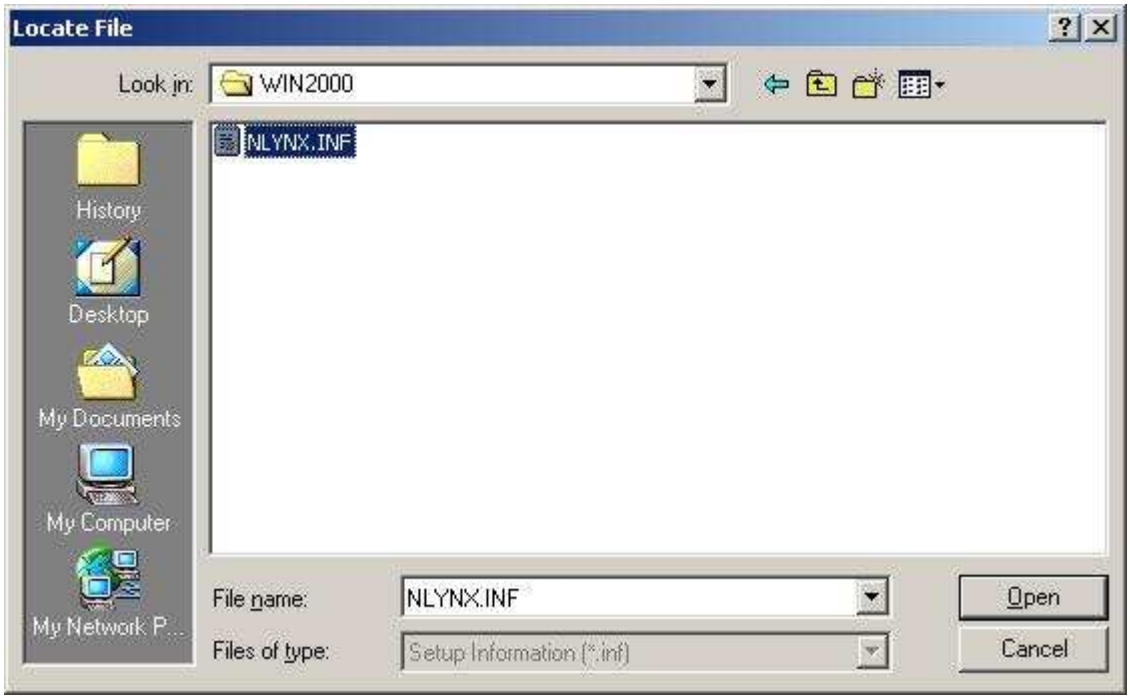
NOTE: If the ES/PCI card has been installed previously, it will indicate the "**NLynx PCI Twinax Adapter**".

NOTE: If the ES/PCI card has a hardware problem, it will indicate an "**Other PCI Bridge Device**". If you get this message, contact warranty support at toll-free 888-278-9922.



5) The **Locate Driver Files** dialogue box will come up. Insert the **ES/PCI CD-ROM**. Remove the check from CD-ROM Drives. Choose **Specify a Location**, and then click **Next>.**

6) Click the **Browse** button.



7) Browse to your CD-ROM (usually the **D:** drive). You will see an INF folder, and then **INF/WIN2000**. You should see the **NLYNX** INF file. Double-click on it, or click it to select it and then click **Open**.

8) It should show the path as D:**INF\WIN2000**, if so, click **OK**.

9) Windows will search the specified location, and then compare the results to it's own.

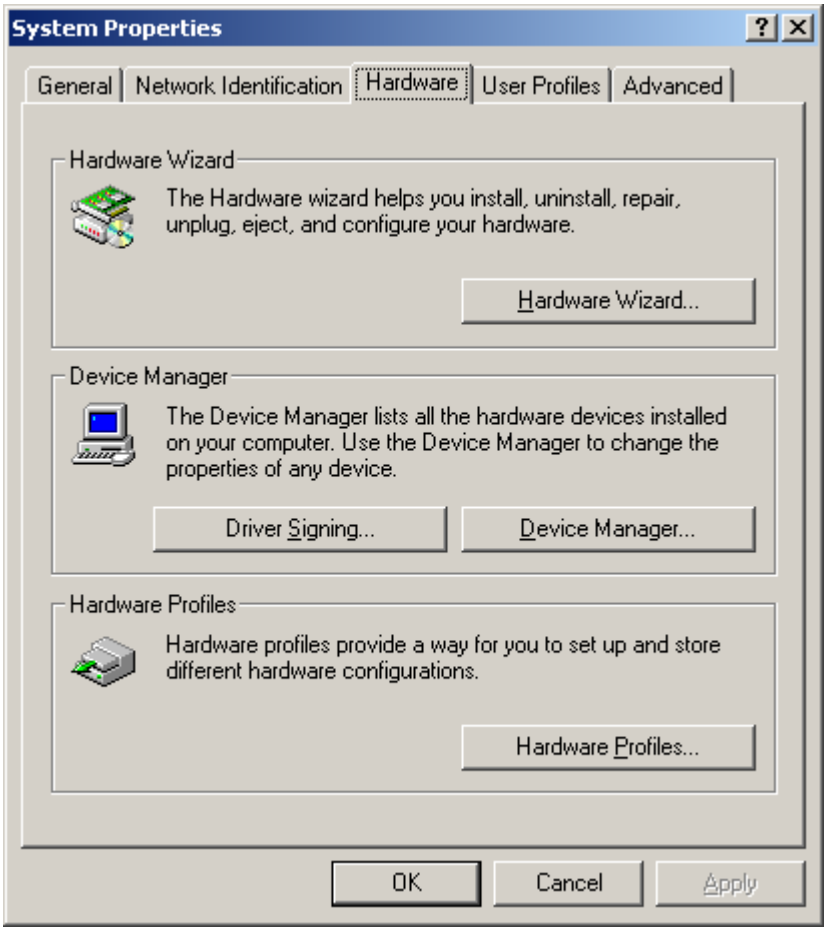
10) Windows will indicate that it is going to install a driver for the PCI Simple Communications Controller. Click **Next**.

11) You finally get the **Finish** option. And you should click it.

Verify The Driver

After installing the driver, you should check it to make certain it is correct.

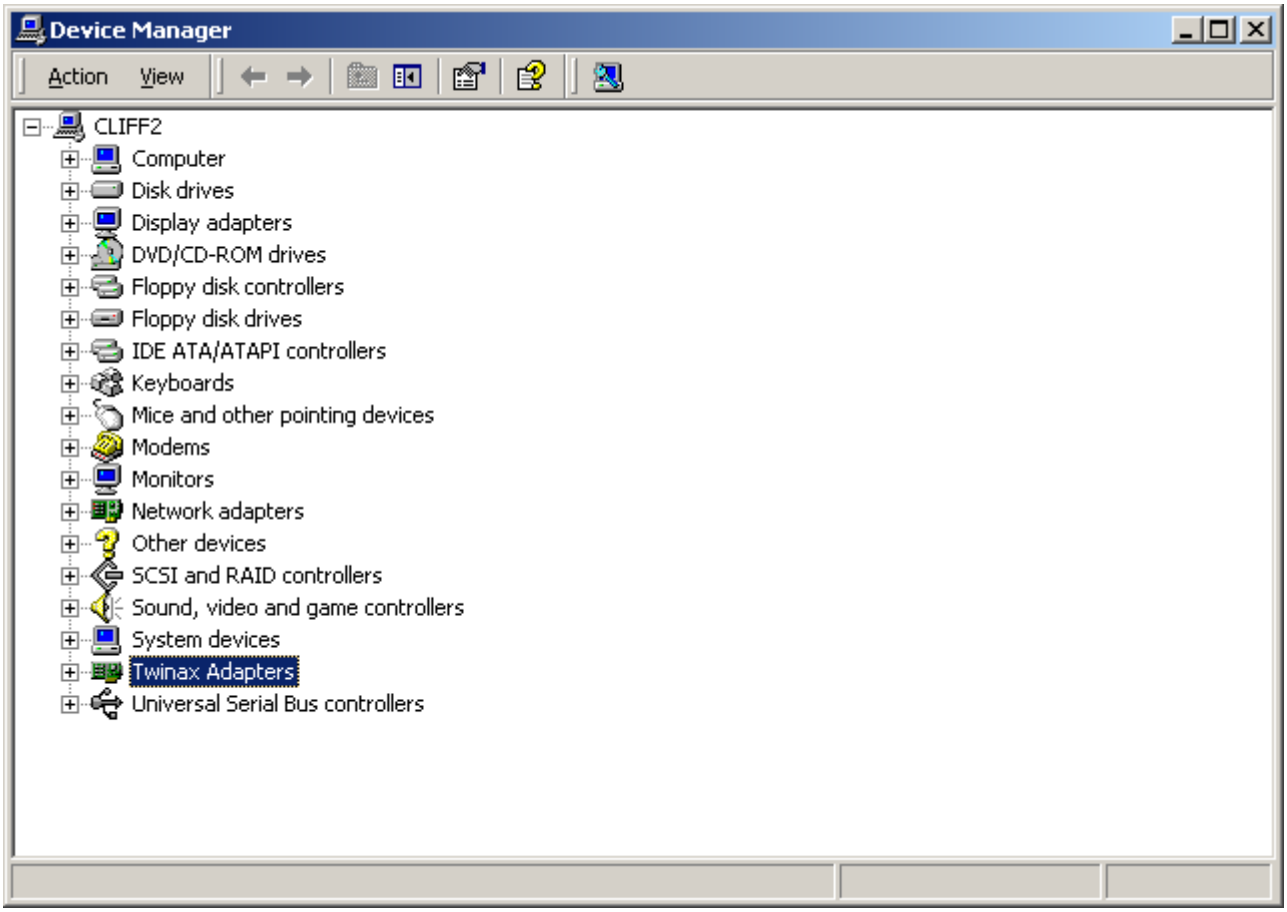
1) Go to the Desktop, and **right-click** on "**My Computer**".



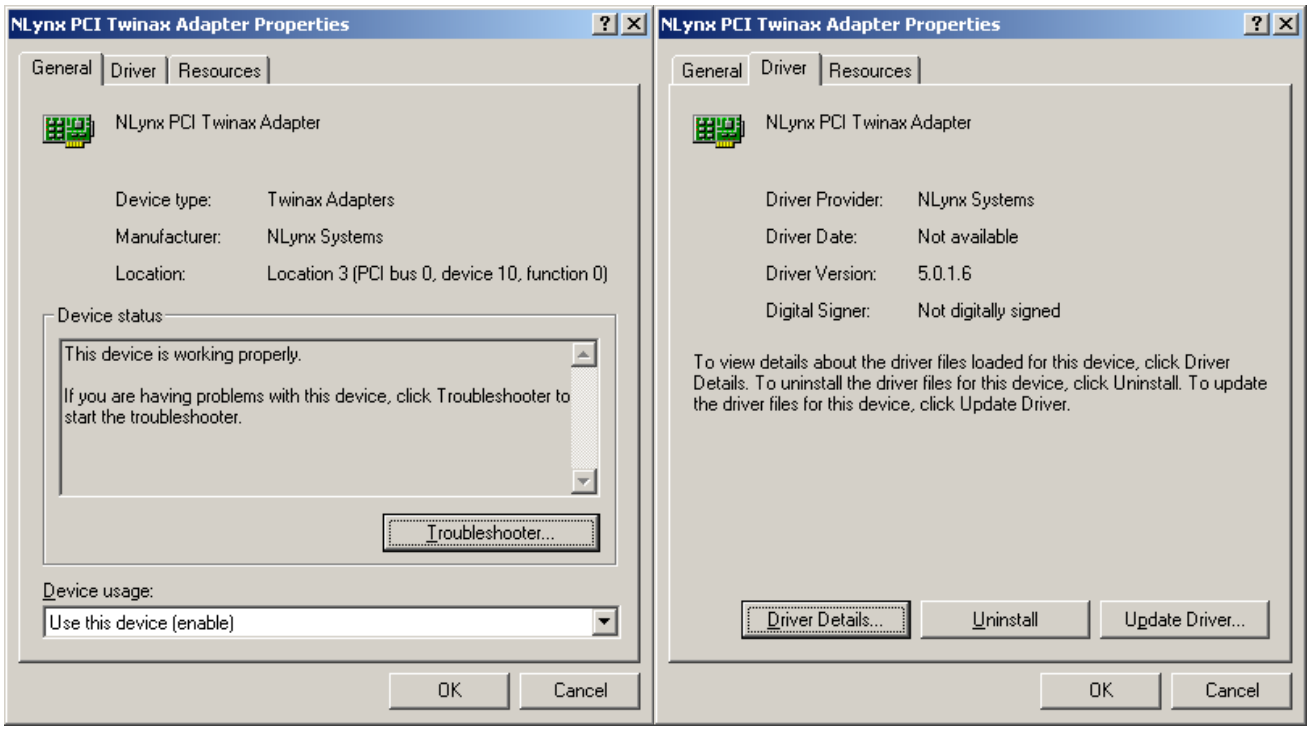
2) Select "**Properties**", which will bring up the **System Properties** window.

3) Select the "Hardware" tab.

4) Select the Device Manager button.



5) Click on the "**+**" next to **Twinax Adapters**. Double-click on "**NLynx PCI Twinax Adapter**" to highlight it.



6) Select the **Driver** tab. For Windows 2000, the driver version should be 5.0.1.7. Click on the Driver Details button. The driver should be **C:/WINNT/System32/DRIVERS/nltwinax.sys**. You can not see this here, but the INF file should be dated 10/13/2004 and the driver file should be **NLTwinax.sys** dated 10/12/2004.

If you do not have the latest driver, you can get it online at
http://www.nlynx.com/html/tb-espcidrivers.htm

Windows 98 Driver Installation Instructions

1. Power off the PC. **Insert** the NLynx ES/PCI Twinax adapter into an available PCI slot on the motherboard. The slots are usually white or cream-colored.

2. **Power on** and logon to the PC.

3. The **New Hardware Found** window will pop up and indicate that it has detected a "**PCI Communications Device"** and then it should bring up the **Add New Hardware Wizard** dialogue box, and indicate the **NLynx PCI Twinax Adapter**. Choose the '**Search for the best driver…'** option, and then click **Next** button.

4. When prompted for the location of the driver or INF file, insert the **ES/PCI CD-ROM**. Choose **Specify a location**, and then click on the **Browse** button. Double-click on the CD-ROM (usually the D: drive). Double-click on the **INF** folder, and then double-click on **Win98**. (It may not see a file. This is okay.)

5. You should be back at the **New Hardware Found Wizard.** When you have located the INF file the **Specify a location** box should say **D:\INF\WIN98**. If this is so, you will click **Next**.

6. Windows will indicate that it is going to install the **NLynx PCI Twinax Adapter** and tell you that it is going to put the driver at C:\WINDOWS\INF\OTHER|NLYNXS~1.INF. Once again you will click **Next**.

7. You finally get the **Finish** option. And you should click it.

8. After installing the driver, you should restart the PC.

Verify The Driver Installation

1) When the PC comes back, *right* click the '**My Computer'** icon and select **Properties**. It will bring up the **System Properties** window, where you will select the **Device Manager** tab.

2) Double-click on **Twinax Adapters**, and then double-click on the **NLynx PCI Twinax Adapter**.

3) After installing the driver, you should check it to make certain it is correct.

4) Click on the **Drivers** tab at the top. If you are using **Windows 98**, the Driver Date should be **10-12-2004**. If you click on the **Driver File Details** button, you will see **WINDOWS\SYSTEM\NLTWINAX.SYS**. It should be version **5.0.1.7**.

If you do not have the latest driver, you can get it online at

http://www.nlynx.com/html/tb-espcidrivers.htm

Windows NT Driver Installation Instructions

Windows NT is not a Plug N Play OS. Sometimes there is a setting in the BIOS for '**PnP OS -- Yes or No?**' This option is basically asking if you have a Plug and Play Operating System, (like Win98). If you select No, the BIOS attempts to perform the Plug n Play operation. Some BIOS do not have this function and the driver must be installed manually.

1) Insert the CDROM

2) Double-click on **My Computer**, then the CDROM, then go to **INF/WIN95**

3) Right-click on **NLYNXPCI.INF** and select **Install**. (Make certain that you RIGHT click, not left)

4) It should install the driver.

5) After that, restart the PC, check the following:

Under **Programs/Administrative Tools/Windows NT Diagnostics/Services**, you should see "**Plug and Play**" with a status of '**running**'.

Under **Programs/Administrative Tools/Windows NT Diagnostics/Resources**, you should see "**pcitdlc**".

Under **Settings/Control Panel/Devices/** you should see a "**PnP ISA Enabler driver**".

Also under **Settings/Control Panel/Devices/** you should see a "**PCI Twinax Adapter**".

Search for **PCITwin.dll** in the **C:/Programs/ES32** folder.

Search for EMUAPP32.ini in the C:/WINNT folder.

Search for PCITWIN.ini in the C:/WINNT folder.

IBM Client Access Support

Ringdale / NLynx Technologies does not support IBM's Client Access software. IBM does not support it either, however the ES/PCI card does work with Client Access. These are the installation instructions for the most hassle-free installation experience. There may be some minor differences between operating system versions, and so forth that will make these instructions vary somewhat. The important points are highlighted. If you find a question that you do not understand, take the default.

REQUIREMENTS:

- IBM Compatible PC that supports **PnP** in the **BIOS**.
- ES/PCI Twinax adapter card with CDROM version 5.0.1.3
- Windows 95, Windows 98, Windows 98 Second Edition, or Windows ME.
- IBM's CA/400 for Win95/98/NT **V3R2M0** or later edition.
- IBM OS/400 V4 or below.

NOTE: IBM does not support the Windows 95/NT client on the Windows 2000 or Windows XP workstations or servers

NOTE: If Client Access was installed previously, it is recommended that you uninstall it.

NOTE: IBM discontinued support for Client Access over Twinax when they release Operating System V5R1. They only support Client Access Express (over IP) from V5 on.

BASIC PROCEDURE:

A Install the ES/PCI card and the INFCA driver.

B Install ES32CA and configure.

C Install Client Access V3R2M0 using typical method.

D Install IBM 5250 Twinax driver.

E Configure the NSRouter for Twinax.

F Configure the AS/400 Connection and display emulation.

Complete instructions are on the website at

http://www.nlynx.com/html/tb-espci.htm

Windows 95 or Client Access Driver Installation

1. Click the Windows **Start** button.

2. Select "**Programs"**, then the **ES32 (or ES95)**, and then finally "**Uninstall"**.

3. You should also uninstall the hardware from the Device Manager. (If the Twinax Adapter hardware was been done before, and the driver chosen was wrong, then you must uninstall.

4. Go to the Desktop, and right-click on "**My Computer**".

5. Select "**Properties**", which will bring up the System Properties window.

6. Select the "**Device Manager"** tab.

7. First look for "**Twinax Adapters"**, if it does not exist, then look for PCI communication device, or a card that you do not recognize in "Other".

8. Click on the "**+**" next to Twinax Adapter to show the devices in this group. Click on "**NLynx PCI Twinax Adapter**" to highlight it. Click the "**Remove**" button.

9. Next delete the **NLTwinax.sys** and the **NLynx.inf** files.
   Select **Start** and **Find**.
   Put **NLTwinax.sys** in the 'named' field and select **Find**.
   (When you find it, delete it)
   Put **Nlynx.inf** in the 'named' field and select **Find**. (When you find it, delete it)

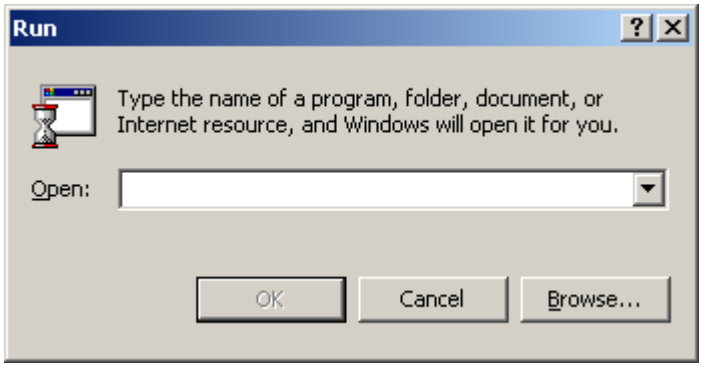
   Next perform a shutdown and power down the PC.

Installing The ES/PCI Software

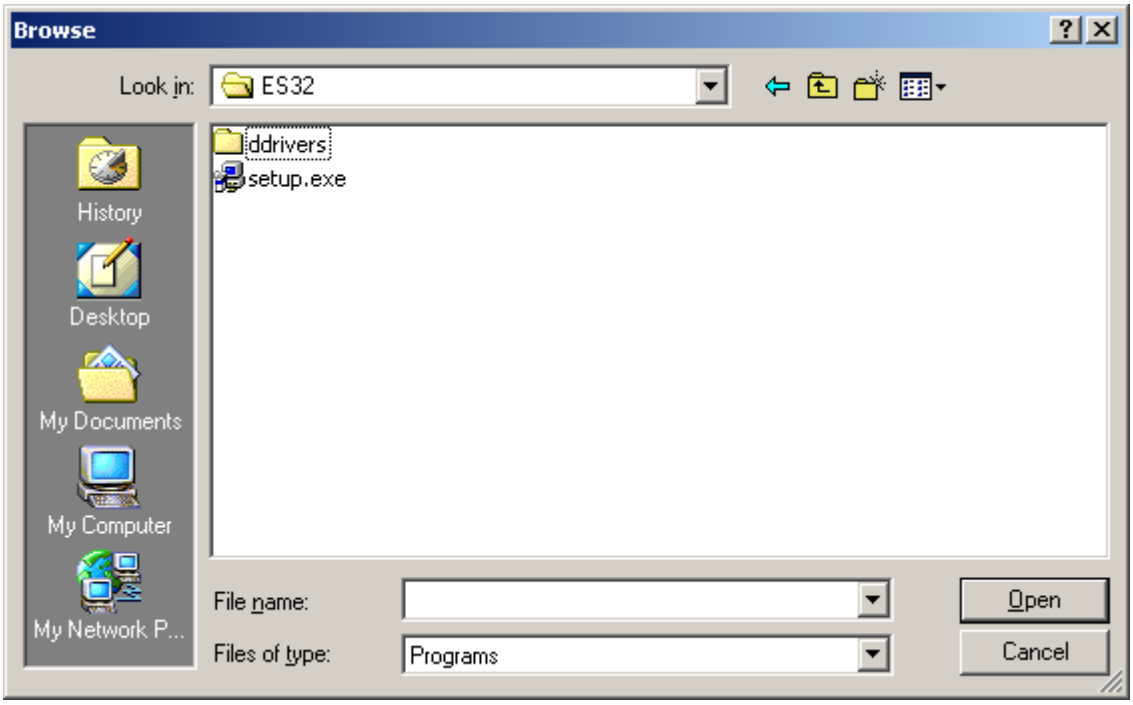
You can install the emulation software setup before installing the hardware driver, but you will not be able to configure the software until the hardware driver is properly installed.

Installing the software is the same for Windows 9X, Windows NT and Windows 2000 users.

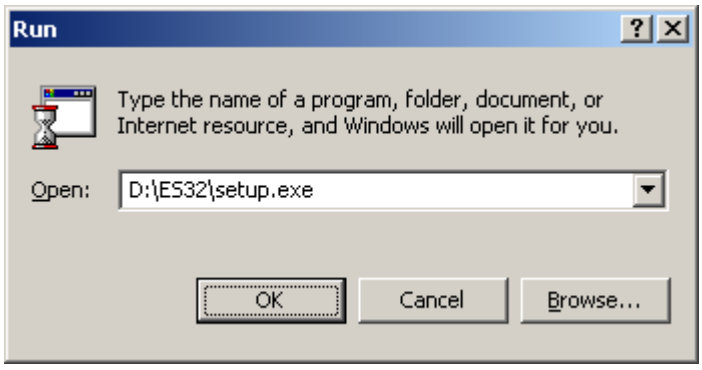
To Install the Emulation Software



1) After the card and hardware driver has been installed successfully, run the emulation software setup from the **ES32** folder on the CDROM. Click the Windows **Start** button, then select **Run**.



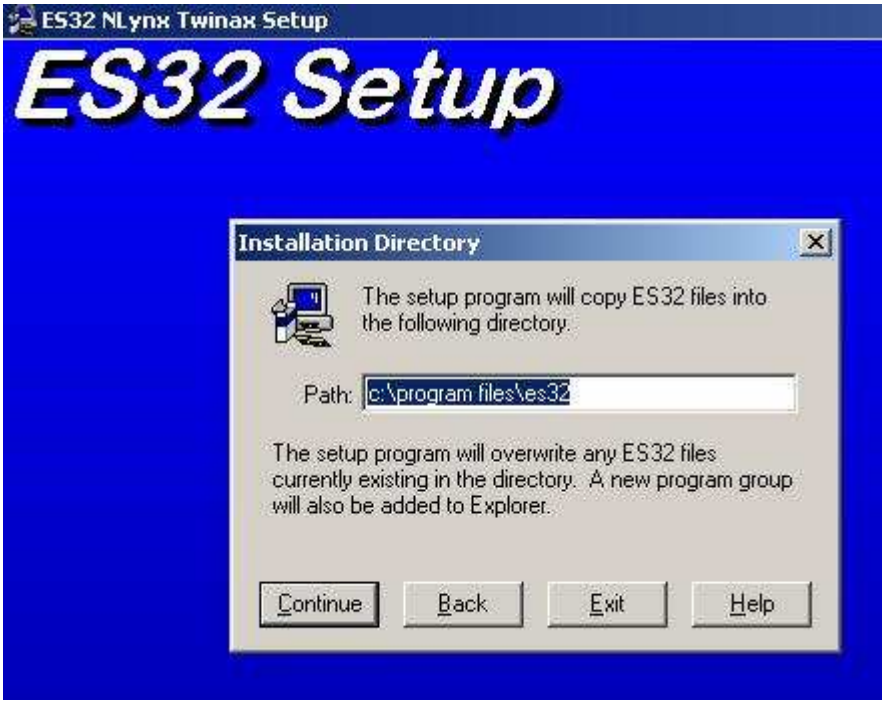
2) Use the **Browse** button. You will click on **My Computer**, then the **D:** drive (or wherever your CDROM is), then the **ES32** folder, and select **Setup** and then click **Open** button.



3) The path in the open field should be something like **D:\ES32\setup.exe**. If it is, click the **OK** button.

4) It will start the **ES32 Setup** and you will get the **"Welcome to ES32"** message. Click the **Continue** button.

5) You will get the SOFTWARE LICENSE AGREEMENT. Select the **Agree** button.

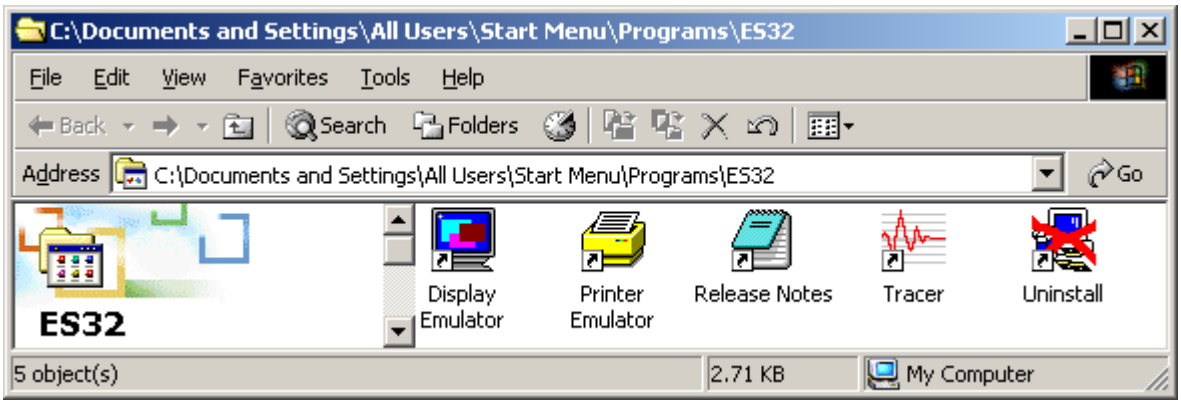


6) It will indicate that the installation directory is **C:\program files\es32**. Click the **Continue** button.

7) After the "**Setup Succeeded**" message appears, click OK.

Configuring ES/PCI

This procedure must be performed when you first start the emulation software after installing the hardware driver and software.

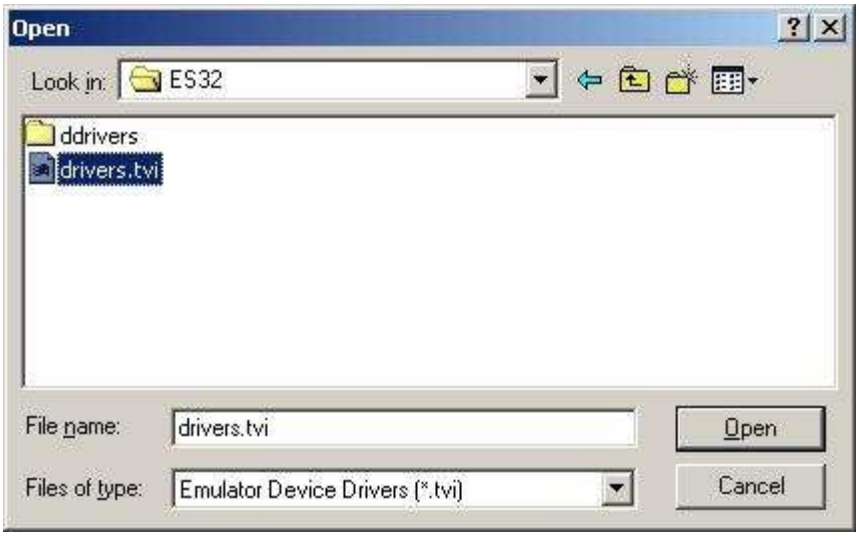


1) Double click on the **Display Emulator** icon.

2) You will get the message "**Do you want to specify the password now?**" It is recommended to click **NO**. You may assign an administrator password later.

3) You will get the message "**There are no device drivers installed to work with the emulator. OK to install now?**" Click **OK**.

4) **New Connection Method** windows will appear, click **Add Driver**



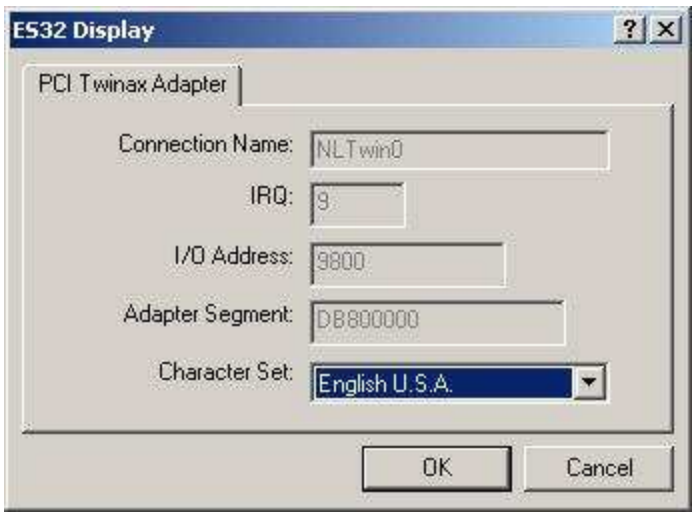
5) Browse to the CDROM drive and go to the **ES32** folder.

6) Select **drivers.tvi** and click **Open**.

7) Click **OK** to the **Find Device Driver** window.

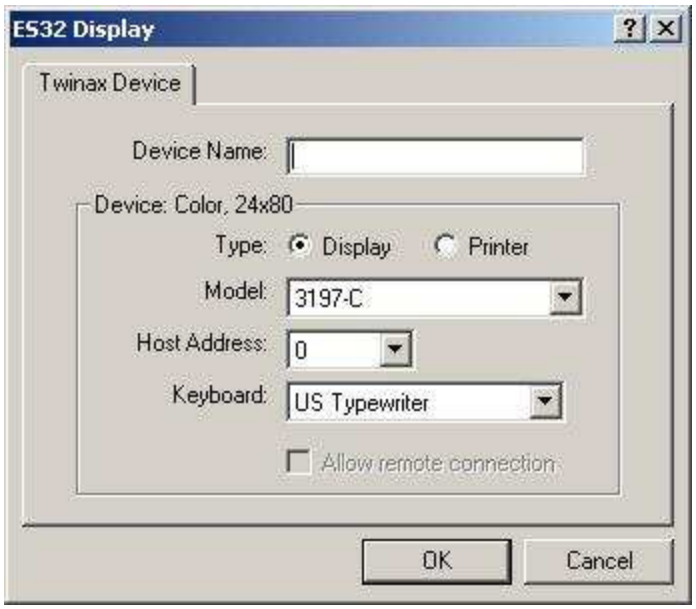
8) Click **Yes** to the ES32 window.

9) Click **OK** to the next message "**Please note…Do you still want to install this device driver?**"



10) ES32 Display windows will appear, if you intend to use the English USA character set, click OK. If not, select a **character set**, and then click "**OK**".

11) When the NLynx Twinax Adapter Driver shows, click **Close**.



12) In the **Device Name** field type in a name you wish to use to identify this device.

SUGGESTIONS: Match the host name or use a name that identifies whether it is a display or printer, and has the host address at the end.

13) Choose the type of emulation session, Display or Printer.

14) Use the pull-down menu to choose the Model. See Appendix A.

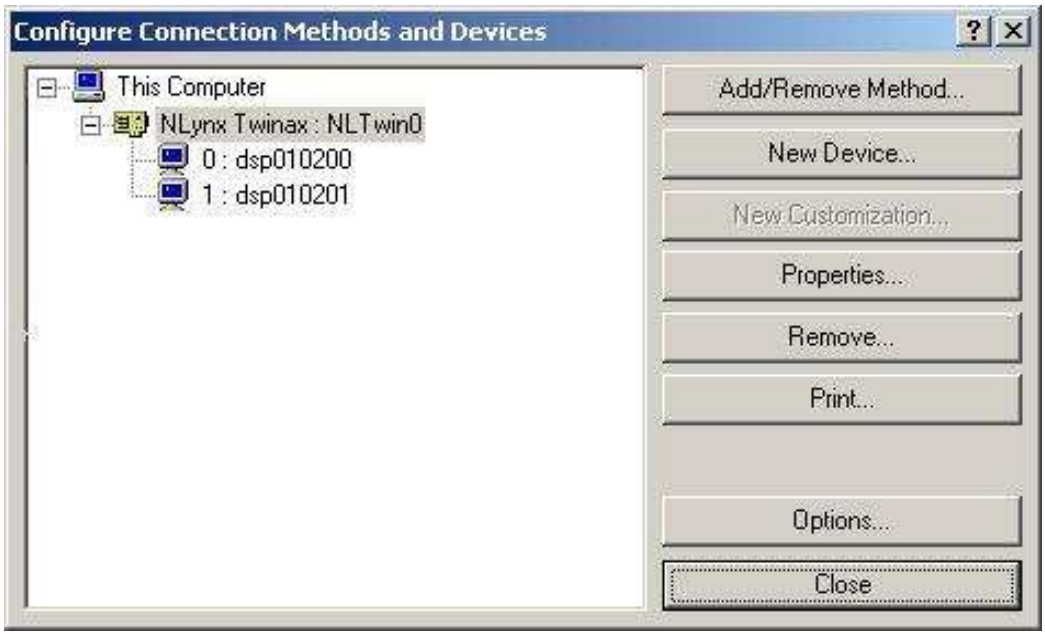
15) In the Host Address field select the twinax workstation address of this device.

IMPORTANT NOTE: You must make certain that you do not select a twinax workstation address that has already been used on this twinax port.

16) In the Keyboard field select one of the following: International World Trade or US Typewriter (default). Click OK.

17) You will receive the message "Would like a shortcut of this device on your desktop," select Yes or No.

18) If you are through adding sessions, select '**Yes**'



19) If you want to add more sessions, click NO to "Do you want to open this new configuration now?" and repeat steps 131-17.

20) When finished, click **Close**.

RUNNING THE EMULATION

At this point, you have completed the setup of ES/PCI and are now ready to run your emulation software.

Running ES32

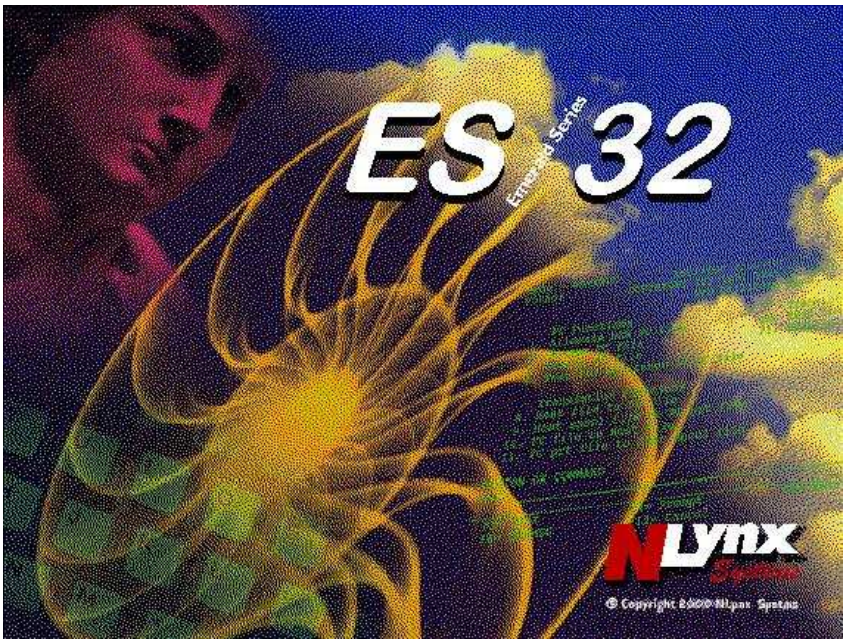
Starting a session

1) If you created a shortcut,

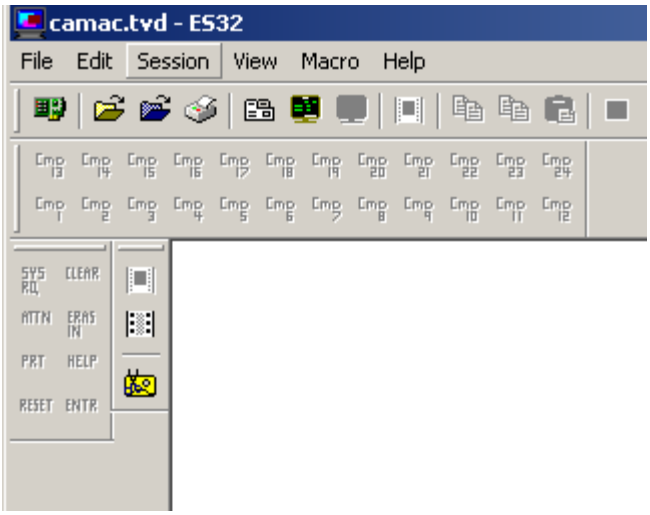
double click on it
or go to START>PROGRAMS>ES32>Display Emulator.

NOTE: If the icon has a red triangle on the upper left, it is already being used.

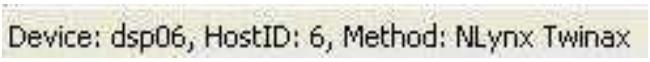
NOTE: If the icon has a big red X over it, it is not able to connect with the host.



2) The splash screen will come up first.



3) When the display emulator comes up it should open the last TVD (Telnet Virtual Display) that was opened. If it does not, and you are at a white screen, then click on the Session menu at the top, and then choose Connect or click the icon that looks like a signon screen. (sixth from the left).



4) The device name, twinax workstation address, and connection method will show in the lower left.

5) You will first see the dancing terminal on a gray screen.

6) A black signon screen should appear.
   - If you do not and the cursor is in the upper right, it means that you do not have a good cable connection to the IBM host.
   - If the signon screen does not come up and the cursor is in the upper left, it means that you have connected to the host, but the session is varied off.
   - If the cursor bounces from left to right, it means that you have configured this session on the same twinax station address that another device is already using or that you have configured as the wrong device type. See Appendix

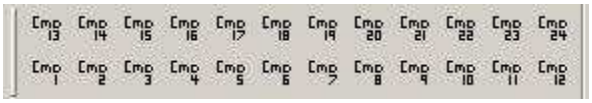
Check with your IBM Host System Administrator to verify the host address and model type for your workstation.

Status Indicators:

- **24-002** indicates the cursor is in the lower left position of the screen.
- **SA** means **Station Available**. If this is showing, but you do not have a signon screen, it would indicate that you are connected, but the controller is down.
- **II** means **Input Inhibited**. You are connected to the host, but an error prevents you from communicating. Pressing Error Reset (Ctrl) will clear this. If it recurs, do an Erase All Input, then Error Reset.
- **IM** is for **Insert Mode**. This allows you to insert new text, push existing text to the right.
- **KS** is for **Key Shift**.
- **MW** indicates that you have a **Message Waiting**.

Tips and tools:

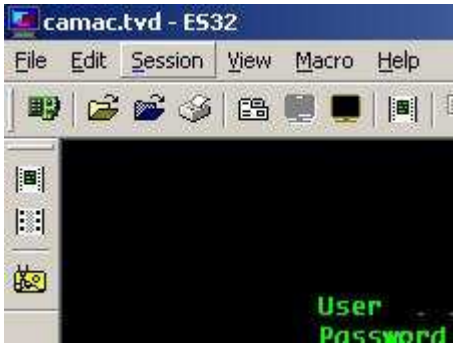
- Click on **View** and then **Function Keys** to get a dropdown of common Function Keys that you can click on with the mouse.



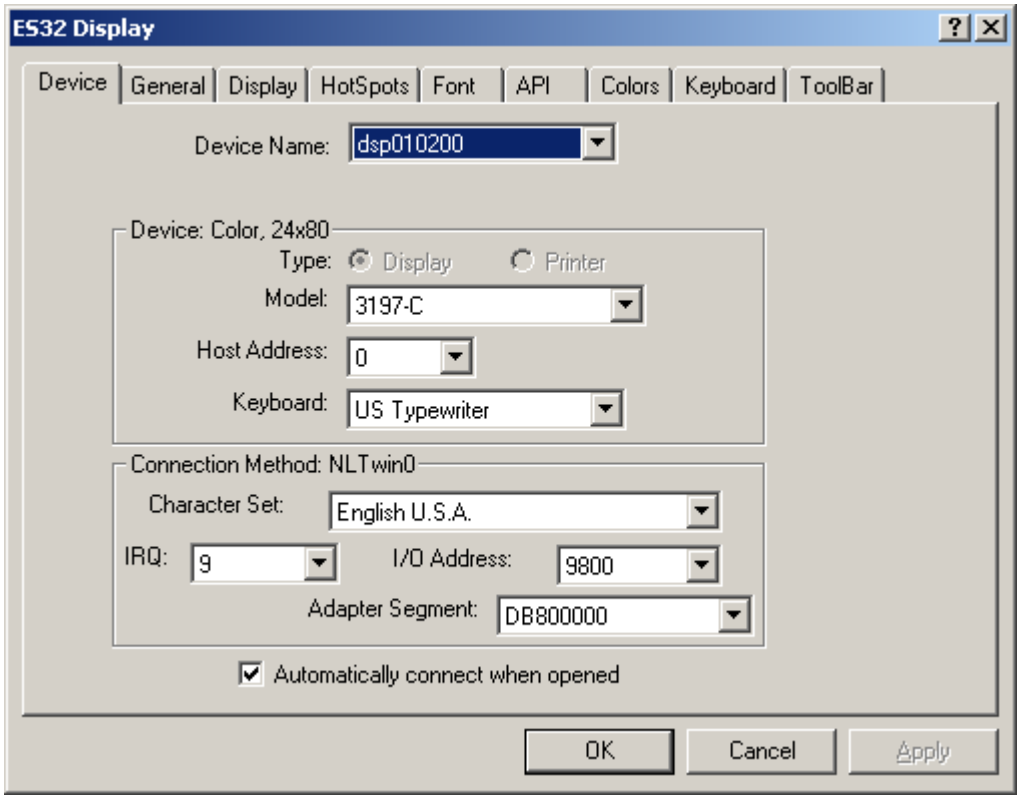
- Click on **View** and then **Command Keys** to get a dropdown of the Command Keys that you can click on with the mouse.

Session Properties

You can configure the properties of your emulation session by clicking on the Session menu at the top of the screen and selecting Properties.

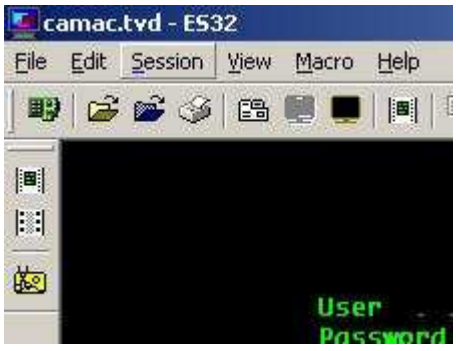


Device Settings:

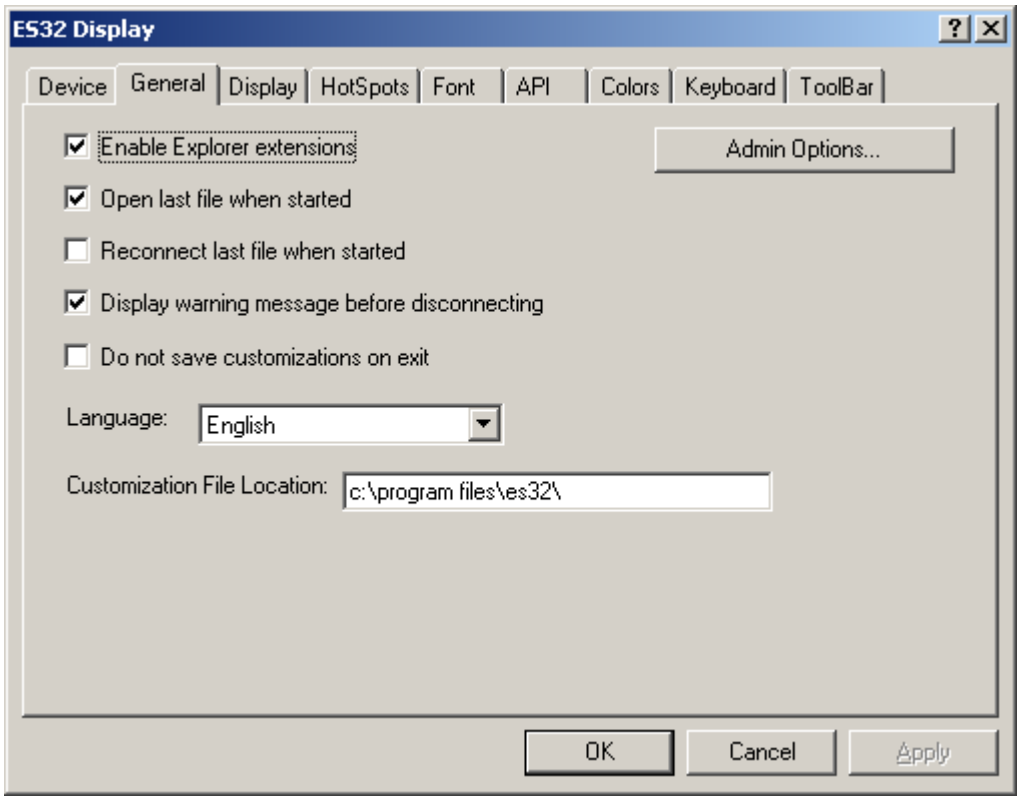


The Device Settings page shows the settings that you configured in the Configuration. You can not alter the settings on this page with the exception of **Automatically connect when opened** if you have the session open.

To alter these settings, close the **ES32 Display** window (if it is open), then either click on the icon that looks like a dark terminal and says Disconnect when you hover the mouse over it, or click on Session and select Disconnect. After disconnecting the session, you can modify your parameters either by Session – Properties or by File – Configure, then opening the session from the Configure Connection Methods and Devices window.



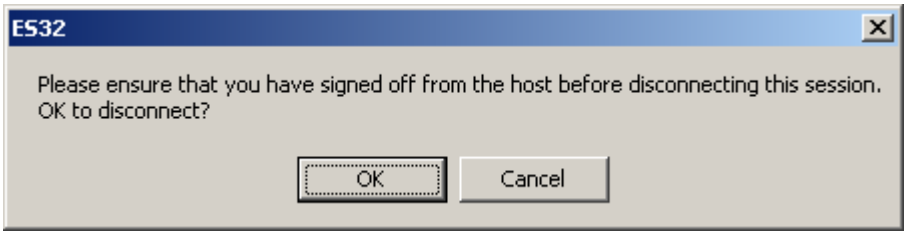
General Settings



Enable Explorer extensions allows you to create shortcuts to TVD and TVP files.

If you open the Display Emulator from the Start / Programs / ES32 / Display Emulator, the option **Open last file when started** will point to the last TVD or TVP that was open.

Reconnect last file when started opens the session.

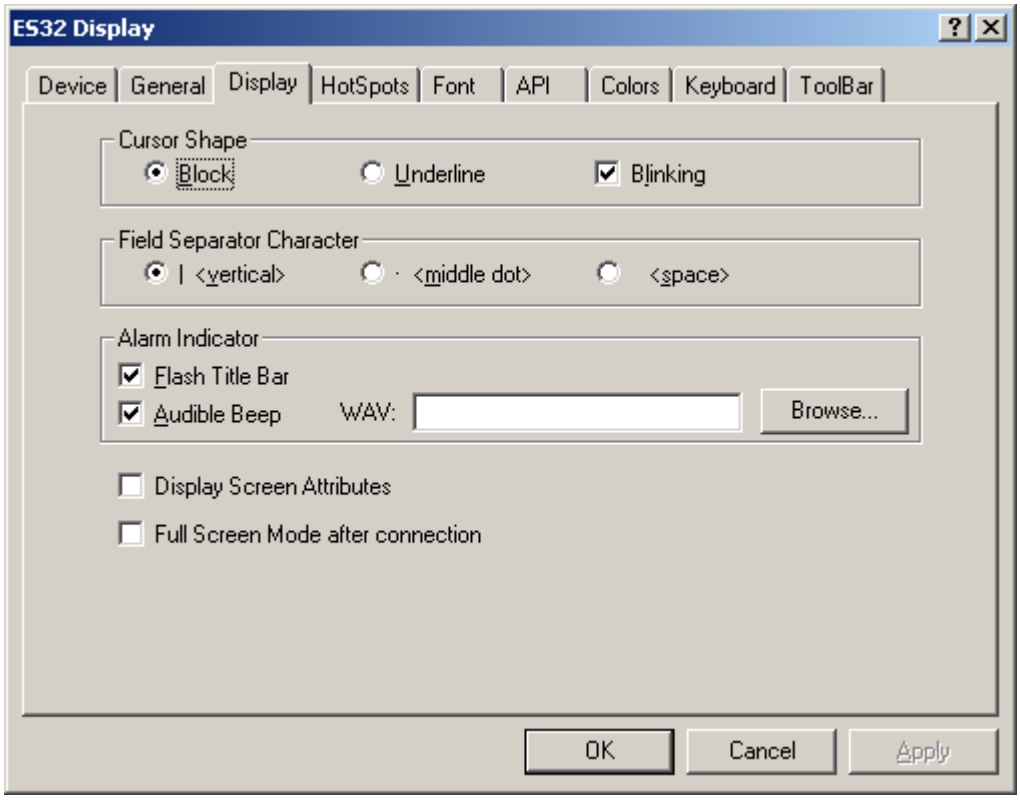


If you shut down a session without logging off, your host may require that the System Administrator vary the session off and back on. **Display warning message before disconnecting** will give the above warning to remind you to log off the host so that you will be able to log on again without contacting the System Administrator.

Do not save customization on exit is for when you are sharing a session with other people or when you do not want a user to change their settings.

Admin Options allow an Administrator to lock options down.

Display options



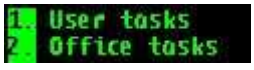
Display options are self-explanatory. Display Screen Attributes is a troubleshooting tool.

If you enable **Full Screen Mode after connection** you will not have your Main Toolbar, Custom Toolbars, Command Key pad, or Function Key pad. If you enable Full Screen and wish to get the other functions back, right-click inside the screen and take the check out of Full Screen.

HotSpots

If HotSpots are enabled, you can click on menu options, or command options that are showing on the screen, using the mouse.

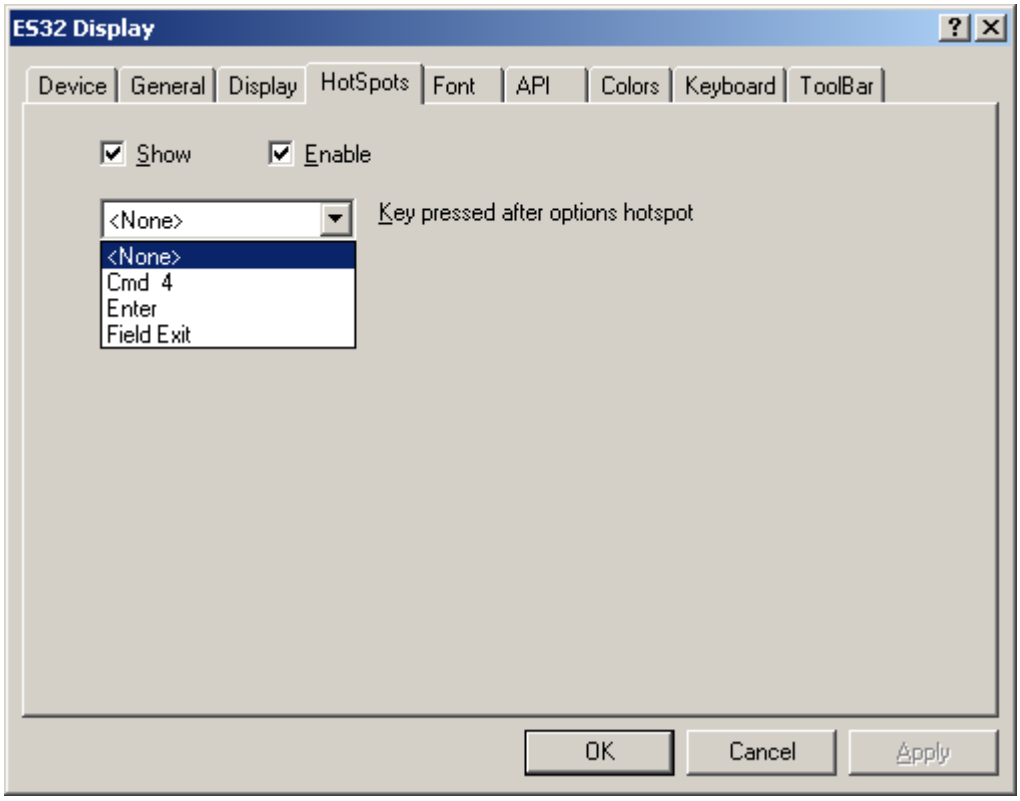
Menu HotSpot Example:



Click on the 1 or "User tasks" to bring up the IBM "User Tasks" menu.

Command HotSpot Example:

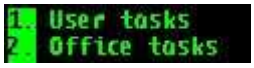
Click on the F3 or Exit, to perform the Exit command.



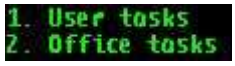
You can select whether Command and Menu HotSpots will be show in this window.

Menu HotSpot Examples:

Showing



Not showing



Command HotSpot Examples:

Showing

Not showing

You can also select whether to add a CMD 4 (usually used for a prompt), an Enter, or a Field Exit after using any HotSpot.

To enable Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Click Enable.

NOTE: Clicking Show highlights all Hotspots, regardless of whether they are enabled or not.

To display Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Click Show.

NOTE: The Hotspots are displayed even if they are currently disabled.

To hide the HotSpots, remove the check from Show.

To hide Hotspots

1. From the Session menu, click Properties.
2. Click the Hotspots tab.
3. Remove the check from Show.

NOTE: If the Hotspots are hidden, they are still active and available to use as long as they enabled.

To use Hotspots

1. Start the emulator and sign on to the host.
2. To enact a command key Hotspot, click on the command key at the bottom of the host screen.
3. To enact a menu item Hotspot, click on the menu item number on the host screen.

NOTE: For menu item Hotspots, the cursor must be on the host command line.

To add a keystroke after a Hotspot

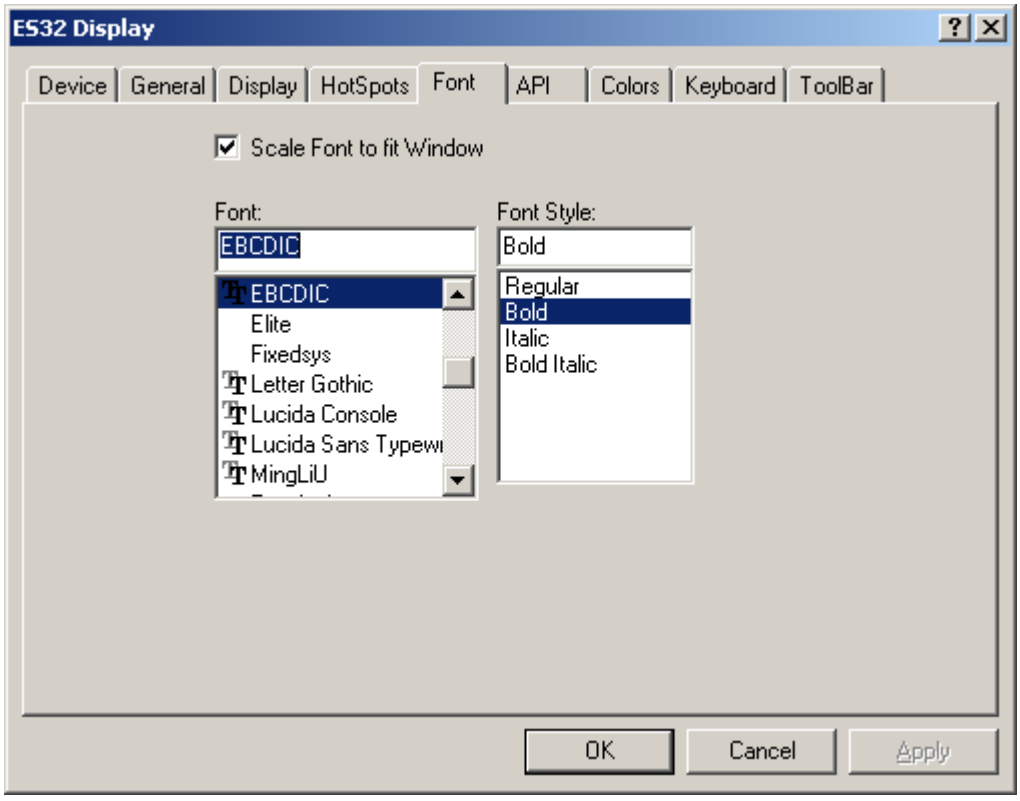
1. From the Session menu, click Properties.
2. Click the Hotspot tab.
3. Select the keystroke you want to be added after a Hotspot is enacted.

Select <None> for no keystroke to be added after the Hotspot is enacted.

NOTE: The keystroke you select will be added after all Hotspots you enact.

NOTE: See the Colors screen to change the colors of Menu or Command HotSpots.

Font



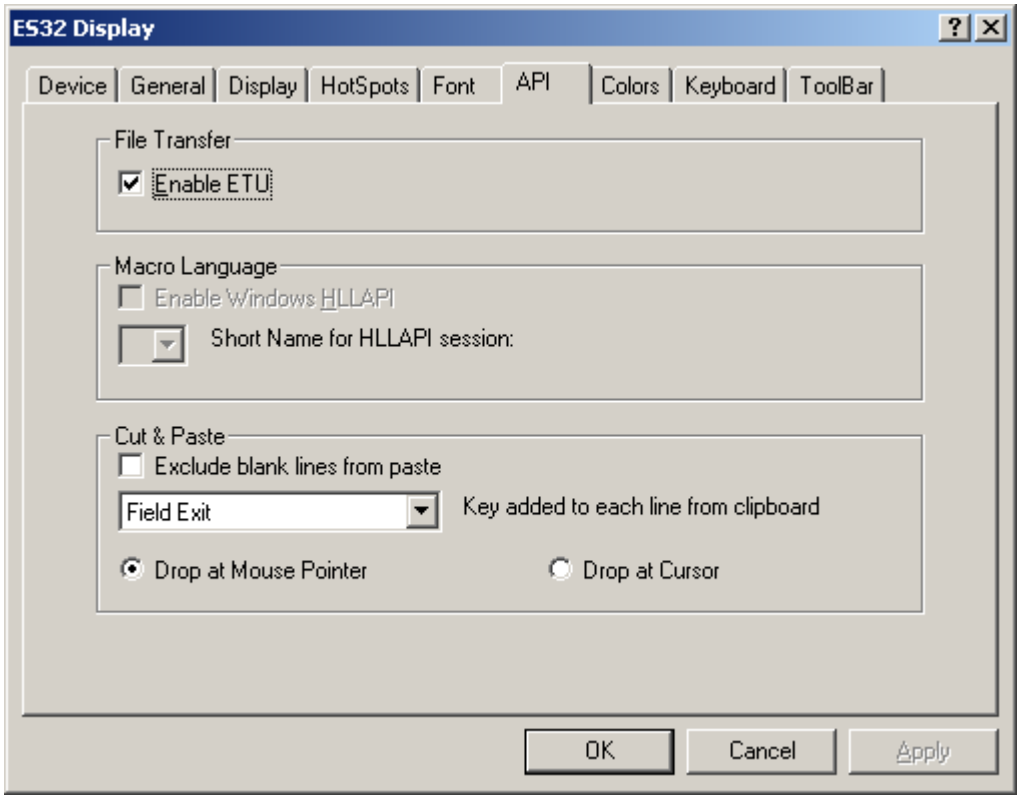
This is a fun screen to play with.

ES32 uses monospaced fonts. They can either be screen bitmap fonts or TrueType fonts. The fact that the font is monospaced is encoded in the font descriptor. ES32 will go through the list that Windows have and select only the monospaced fonts for the user to select.

TrueType fonts are really meant for printing. For display purposes, the font installer will create a *.FOT file that contains the screen bitmap fonts.

Most fonts that you find in Windows are proportional fonts. They cannot be used in ES32 because a 5250 terminal display only uses monospaced fonts. Monospaced fonts are essentially fonts where the width of each character is the same. That is, the width of an "I" is the same as a "W". Terminal emulators cannot use proportional fonts; otherwise, tabular data will be out of alignment.

API

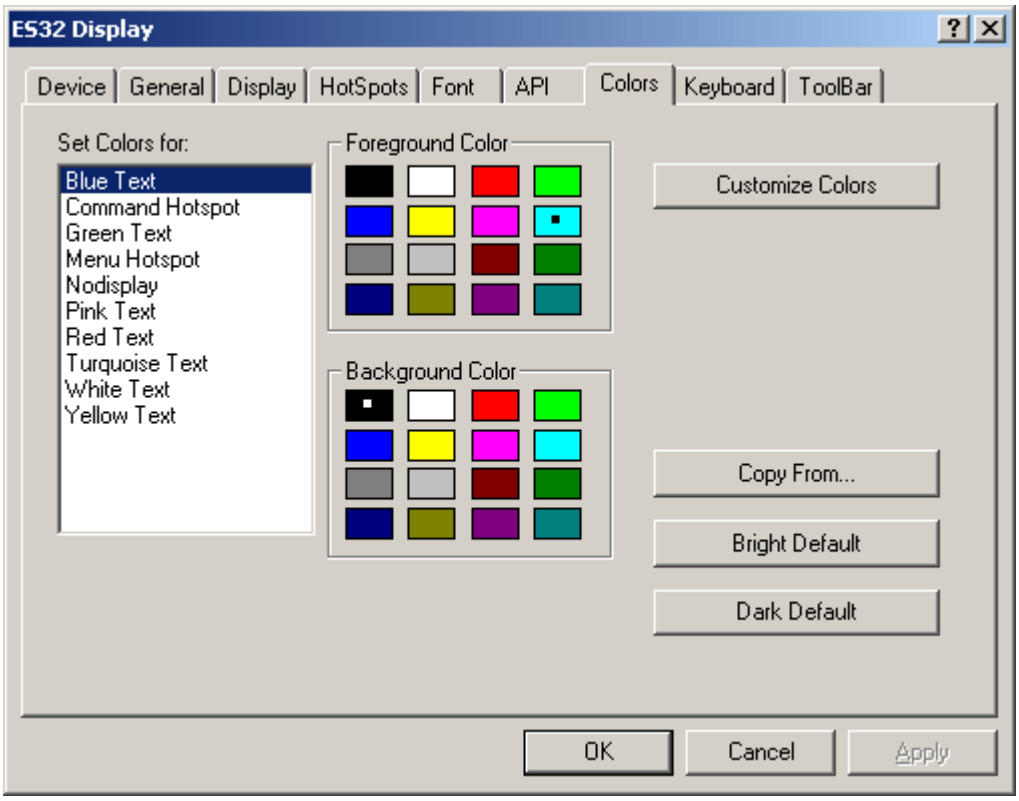


The **Enable ETU** must be checked if you are using ETU. No harm is done by leaving it enabled if you do not have or use ETU.

Macro Language is for use with HLLAPI. In order to use this a C Language programmer can obtain the Advanced Developer's Kit from Ringdale. Contact technical support for this.

Cut & Paste allows advanced functionality to normal cut & paste.

Colors



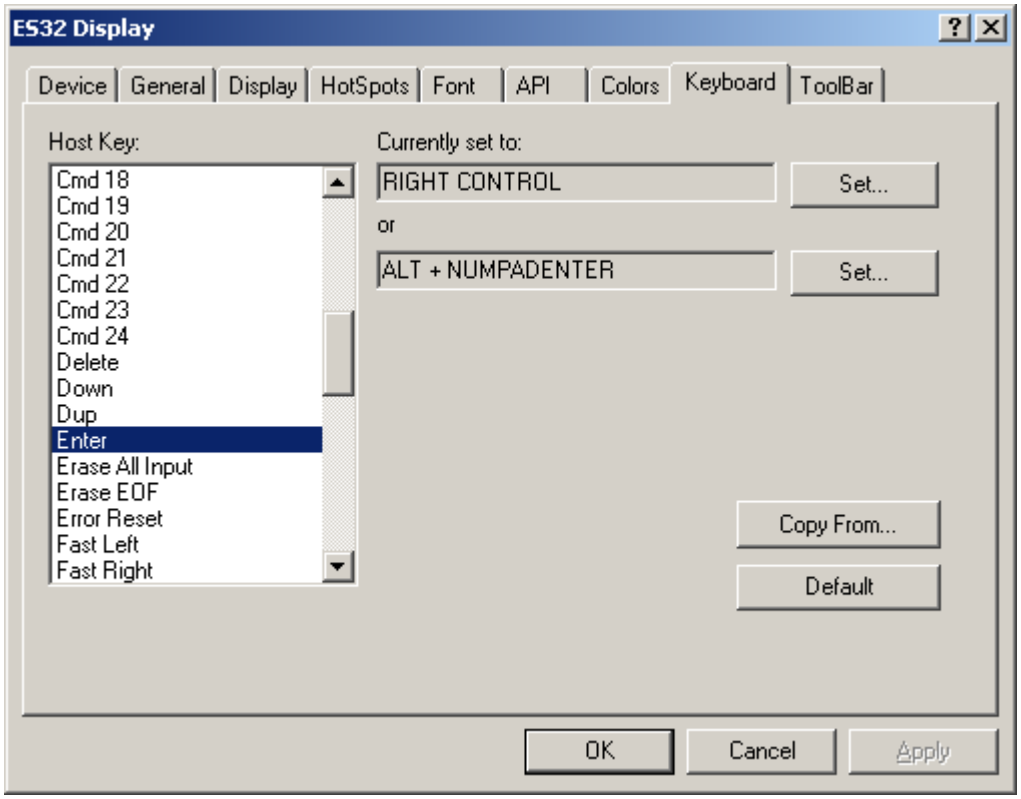
Click on the type of text that you would like to change the color of, then select the foreground color and background.

NOTE: Do not use the same color for your foreground and background, or your data will be invisible.

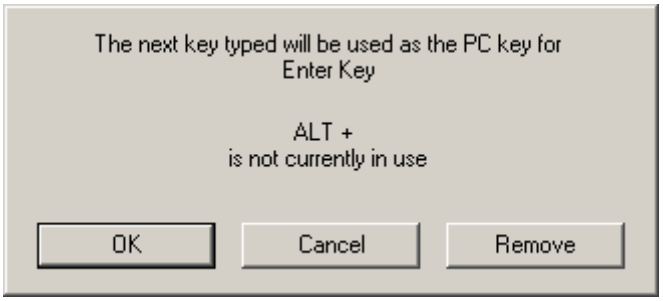
Keyboard

The default ES32 keyboard is laid out like an IBM 5250 keyboard. The Enter key on an IBM 5250 keyboard is positioned where the Ctrl key is on a standard PC keyboard. If you would like to change it so that the key names match the functions, or if you would like to figure out where one of the IBM 5250 functions are mapped, use these instructions:

- Click on the **Sessions** menu and select **Properties**.
- Click on the **Keyboard** tab.
- From the list of **Host Keys**, select the one you want to see or re-map.

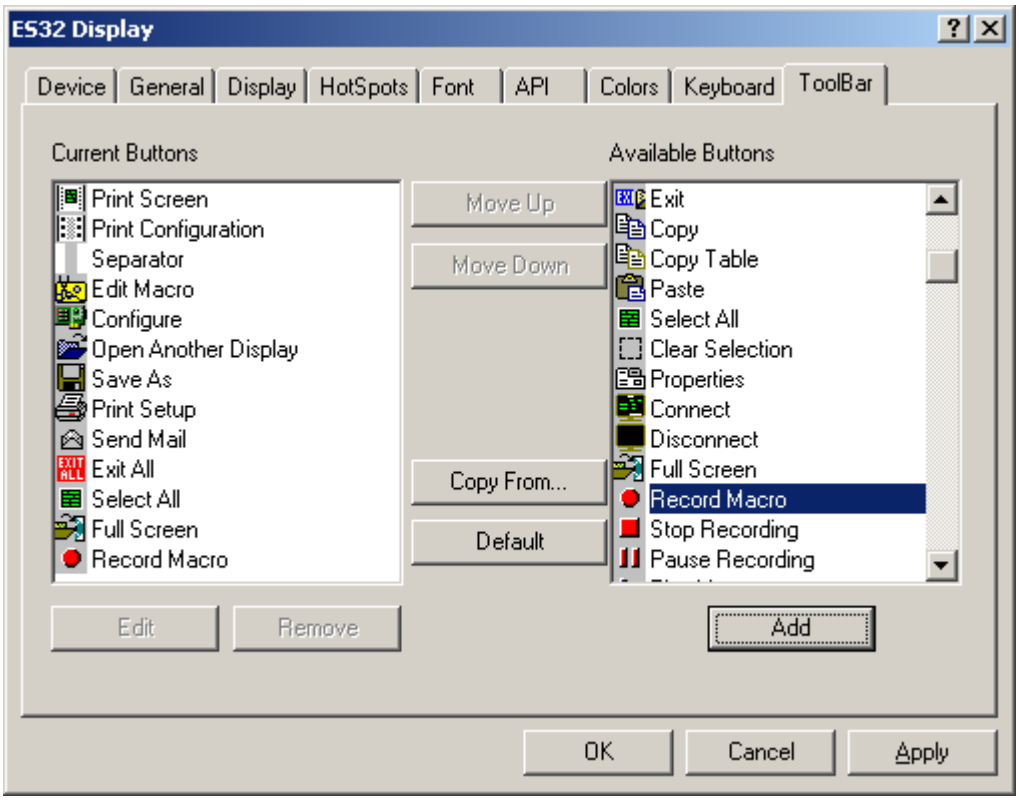


- If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To** on the right side of that window. In the above example, it shows that Enter is mapped to the right Ctrl key.



- If you would like to change it click **Set**, then press the key, or a key combination with Control, Alt, or Shift that you would like to remap it to. It will inform you as to whether that combination is already in use. If you choose to continue, click **OK**.

Toolbar



In the toolbar menu you can add buttons for functions that you use regularly and desire fast access to.

After you add them, they will show on the side of your emulation screen.

Adding another Display session

1) If it is not already started, start the Display Emulator. Start/Program Files/ES32/ Display Emulator.

2) Disconnect any open sessions. Click the **Session** menu at the top of the ES32 screen, then select **Disconnect**.

3) Click the **Configure** icon, (or select **File**, then **Configure**) to bring up the **Configuration Connection Methods and Devices** window.

4) Click once on **NLTwinax: NLTwin0** to select it and the **New Device** button will become enabled.

5) Click on the **New Device** button to bring up the **Configuration Properties** window.

6) Give it a name. You cannot choose a name that is in use on this PC already. You cannot use spaces. It is recommended that you put in a name that has the Host Address at the end of it. For example, if the application that you use is MAPICS, use MAPICS0.

7) Select **Display**.

8) Select the type of display or printer. This is not critical. If you have questions, ask your AS400 administrator or use the default.

   - 3197C is an 80 wide color terminal
   - 3197D is a 132-wide color terminal
   - 5291 is a good terminal for older systems

9) Select an unused **Host Address**. On every twinax port (or cable run) there are seven '**work station address**' from 0 to 6. If you are checking this on the AS/400 using Display Device Description, this is identified as the "**Switch Address**" on the AS/400. Sometimes you need check the configuration of each device that is connected to the same Twinax daisy-chain.

When you are done configuring it, click **OK**.

Using Macros

With the emulator you can create macros that let you perform tasks on the host. A macro is a set of instructions that you record and then playback. Macros make it easy to perform complicated tasks or tasks that you do over and over.

To record a macro

From the Macro menu, click Record or click the button.

Perform the steps you want to record. While you are recording, any keys you press are captured and saved for when you play back the macro.

If you want to pause the macro while you are recording, click on Pause from the Macro Record menu.

NOTE: You might want to pause in the middle of macro if you are recording a task that contains sensitive information, like a sign-on procedure containing a password. You can pause the macro and, after entering your password, click Record again to begin the recording the macro again.

When you are done, from the Macro menu, click Stop or click the stop button.

To play back a macro

1. From the Macro menu, click Play.
2. Click the macro that you want to play back.

NOTE: You can assign macros to the Toolbar. To play back a macro, just click the Toolbar button assigned to the macro.

Adding a macro to the toolbar

1. On the Session menu, click Properties.
2. Click the Toolbar tab.
3. Under Available Buttons, scroll down until you come to the list of Macro Buttons.
4. Click one of the macro buttons.
5. Click Add.
6. Type a name for the macro.
7. Type the macro file name or select Browse and choose the macro file from the list.
8. Click OK.
9. Click OK again.

To pause a macro

1. During playback of a macro, click Pause from the Macro menu under Play.
2. Click Play to resume playback of your macro.

To edit a macro

1. On the Macro menu, click Edit.
2. Click the macro you want to edit.

NOTE: Macro files have .tvm extensions.

3. Click Open.

The emulator launches the Notepad application. You will edit the macro from there.

4. Edit the macro by:

Adding SEND, PAUSE, or HOSTKEY commands or changing the existing text in a ASCII string.

Adding LABEL and GOTO statements to make it loop.

5. Save the macro.

NOTE: You may find it easier to record a new macro than to edit an existing one.

EXAMPLE:

```
HOSTKEY (Enter)
HOSTKEY (Enter)
HOSTKEY (Enter)
LABEL START
SEND 1
HOSTKEY (Enter)
SEND 1
HOSTKEY (Enter)
SEND 1
HOSTKEY (Enter)
HOSTKEY (Cmd 12)
SEND 2
HOSTKEY (Enter)
HOSTKEY (Cmd 12)
GOTO START
```

The ES32 Printer

IBM's 5250 printers are very different from the rest of the world's printers. IBM printers connect to the IBM host using Twinaxial cable, whereas the rest of the printers generally connect using serial or parallel cables. IBM printers only accept EBCDIC data, whereas the rest of the world's printers accept ASCII data. IBM printers follow the IBM 5250 protocol, a complicated form of communications that does addressing, error-correction, and so forth, whereas the rest of the world's printers only handle hand-shaking flow control methods. The data formatting commands are completely different between IBM and the rest of the world.

Three main things control the data formatting, the printer you are emulating, the printer you have, and where you plan to control the output.

Adding and configuring an ES32 Printer

This is the complete process for adding the ES32 printer for the ES/PCI card.

1) First you must determine what Twinax station address you are going to use for the card. The IBM Twinax line supports seven station addresses from 0-6 and if you use an address that another device is already using, you will bring the whole Twinax line down.

2) Determine what IBM printer you want the ES32 to emulate. If you only want portrait printing, chose 5256, if you only want landscape, choose 5225, and if you want both choose 5219.

3) Open your ES32 **Display Emulator**.

4) Close the sessions down by signing off the host and then selecting **Session – Disconnect**.

5) Select the **File** menu, then **Configure**, and it will bring up the **Configure Connection Methods and Devices** window.

6) Select the **Nlynx Twinax :NLTwin**# card, by clicking on it, then click on **New Device**. It will bring up the **Configuration Properties** window.

7) You must give it a name, any name, in the **Device Name** field.

8) Select the **Printer** (vs. Display) dot.

9) Select the **Model** (See Appendix B for more information on what printer to emulate).

   - 5256 is a portrait printer
   - 5225 is a landscape printer
   - 5219 is a page printer that can do both

10) Select the **Host Address**, making certain not to choose an address that another device is already using.

To Open A Printer Session

1) On the **File** menu, click Open Printer.

2) In the **Look In** box, click the drive that contains the session you want to open. This will usually be the C: drive.

3) Below the **Look In** box, click the folder that contains the session you want to open. This will usually be the C:\Program files\ES32 folder.

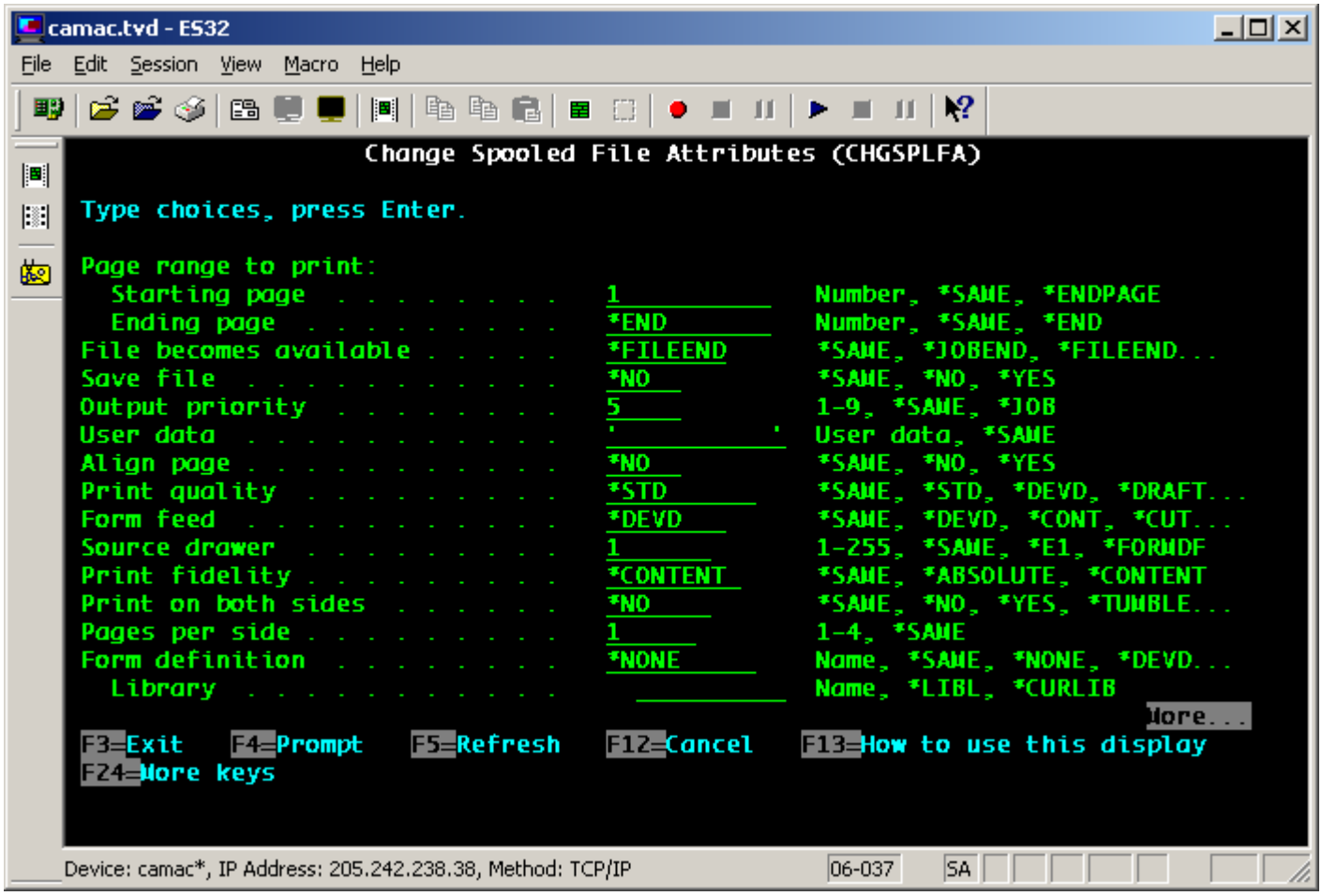
4) Click the display session name, or type it in the **File Name** box.

5) Click **OK**.

Print Data Control

The ES32 software is very versatile in controlling the data to the printer. The default is to not change the data at all.

Formatting that occurs on the host



First the data is formatted by the application that generated the data. MAPICS, QRY or SEU for example. You can select the form size in length and width, the form type, and the number of copies. These parameters can be adjusted in the spool queue as well.

AS400 Host Print Transform

If you have an AS/400, there is a parameter that can be enabled, called Host Print Transform. Host Print Transform is a way to allow the AS/400 to control all aspects of the print job, CPI, LPI, and special features. It allows you to select the specific Manufacturer, Type, and Model of your printer. If this is enabled, the data will be sent in **"transparent ASCII"** from the AS400. The AS400 will have already formatted the data for your printer model. Control is then handled at the AS/400 application. This method works quite well in applications where the user needs complete control over their device.

On your AS400, Using the **CHGDEVPRT** command, set:

Host print transform . . . . .. *YES
Manufacturer type and model. . * *YourPrinter*

Put your cursor on the **Manufacturer type and model** line and press **F4** to see your choices for Manufacturer type and model. You can then press **F1** for more specifics. You do not have to match a printer model exactly. Quite often a printer will support other emulations (for example IBM Proprinter, or PCL) and you can set the Manufacturer type and model parameter to match. See Appendix C for help

If you use Host Print Transform, you should go to the Windows printer setting and change the Spool Settings to Print Directly to Printer.

To change the spool settings, follow these steps:

1) Click the **Start** button, point to **Settings**, and click **Control Panel**.

2) Double-click the **Printers** icon.

3) Use the **right** mouse button to click the printer icon, and then click **Properties** on the menu that appears.

4) For Win95, Win98, or WinME, click the **Details** tab, and the **Spool Settings** button.

4) For Windows XP or Windows 2000, click the **Advanced** tab.

Select **Print directly to printer**.

Formatting that occurs in ES32

ES32 first looks at the data to see if **"transparent ASCII"** (Host Print Transform enabled) is sent.

If **"transparent ASCII"** (Host Print Transform) **is enabled**, the data is already formatted for a specific printer and is ported straight to the printer port whether it is a parallel port, USB port, network port, or serial port.

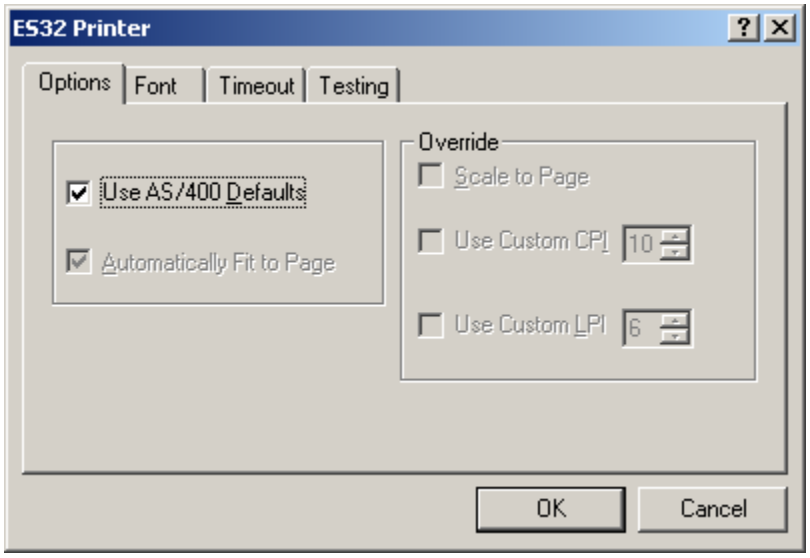
NOTE: If the printer that the data is sent to is not the same as the model that is selected in the AS/400 manufacturer type and model, unpredictable results may occur.

NOTE: If Host Print Transform is enabled, the ES32 Properties – Option and Font are disabled.

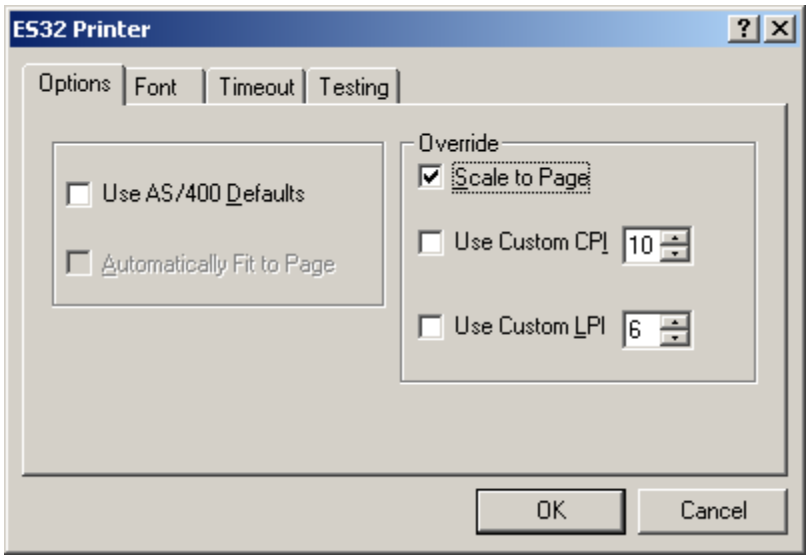
If **"transparent ASCII"** (Host Print Transform) is **not enabled**, then ES32 converts the EBCDIC data to ASCII and puts the data to a temporary 'document' based on the SCS formatting.

Use AS/400 Defaults:

When this option is selected the emulator will scale and rotate each print job so that it will best fit onto a piece of paper. Selecting this option may override the paper orientation you have selected from Page Setup. If ES32 is configured to use AS/400 defaults, once a full page of data is received, that data is sent to the Microsoft PAPI, where the data is formatted for the printer that you have selected.



Not Using AS/400 Defaults:



If you take the check out of the "Use AS/400 Defaults" you can select "Scale to Page" and define Custom CPI and LPI. If you select Scale to Page, you must define the Page Setup. This option does not work well if you are sending different types of print jobs.

1) In your ES32 printer window, click on the **Online** button to take the printer offline.

2) Click on the **Properties** button.

3) Under the **Options** tab, take the check out of the "**Use AS/400 Defaults**".

4) Select either "**Scale to Page**" or define specific parameters.

NOTE: If you select Scale to Page, you must further select define the **Page Setup**.

Getting Help

For help on running your emulation software you can use the context sensitive on-line help, built into the application.

Appendix A

Terminal Device Type Codes

5250 Terminal Model	System 36 Device Code	Monitor Type	Size
3179-2		Color	
3180-2	11	Monochrome	27 x 132
3196	15	Monochrome	24 x 80
3197-C	26	Color	24 x 80
3197-D or -W	16	Monochrome	27 x 132
3477-FC			
5251	00	Monochrome	24 x 80
5251-11	01	Monochrome	24 x 80
5291-1	00	Monochrome	24 x 80
5291-2	10	Monochrome	24 x 80
5292-1	20	Color	24 x 80
5292 model 2	21	Color	24 x 80

Appendix B

System 36 Printer Device Type Codes

5250 Printer Model	System 36 Device Code	Format	Character Size
4214	PC or EA	Portrait	10 CPI
5256	PB or AC	Portrait	10 CPI
5224	PC or BB	Landscape	10 or 15 CPI
5225	CD	Landscape	10 or 15 CPI
5219	3P	both	10, 12,15 CPI
3812	3P	both	10, 12,15 CPI

ES32 supports emulation for the following IBM printers:

5256 Model 1,2, or 3	4210 Model 1	5224 Model 1 or 2
5225 Model 1,2,3, or 4	5219 Model D01	3812 Model 1 (SCS Mode)

The characteristics of these IBM printers range from very simple (IBM 5256 with single line and character densities) to very sophisticated (IBM 5219 with full word processing support). The following is a brief summary of features available for each emulated printer as viewed from the host's point of view.

5256 Printer

This is the simplest printer in the line. It supports only 10 CPI and 6 LPI. A switch on its front panel enables you to change to 8 LPI, but no software control is provided for this function. The System/3X or AS/400 knows these limitations and ignores any request to alter the character or line density values.

The only available feature for this printer is form control. The page length must be specified as the number of lines to be printed per page, while the page width must be specified as the number of characters per line, up to a maximum of 132 columns. If any attempt is made to print beyond the horizontal limit, the printer inserts an automatic NL (New Line). An attempt to print beyond the vertical limit introduces an automatic FF (Form Feed).

The OCL PRINT procedure on System/36 and printer files on System/38 and AS/400 are partially supported due to printer limitations, allowing only change of the page length.

If used under DW/36, TM/38 or Office/400, bold, underline and overstrike are available since they are achieved by overprinting. This printer emulation is best suited for applications that do not need different line and character densities or advanced features.

The 5256 printer only supports 10 characters per inch. This character density is mapped into a font on the ASCII printer as specified on the workstation configuration menu.

When configuring the System/3X or AS/400 use the following device codes for this type of printer:

System/34	P
System/36	PB or AC
System/38	DEVTYPE (5256) MODEL (3)
AS/400	TYPE (5256) MODEL (3)

5224 and 5225 Printers

These printers are among the faster printers available for the System/3X environment. Available features include form control, variable character density, and variable line density.

The page length must be specified as the number of lines to be printed per page, while the page width must be specified as the number of characters per line, up to a maximum of 132 columns at 10 CPI and 198 columns at 15 CPI. If an attempt is made to print beyond the horizontal limit, the printer inserts an automatic NL (New Line). An attempt to print beyond the vertical limit introduces an automatic FF (Form Feed).

The valid character densities are 10 and 15 characters per inch. These character densities are mapped into fonts on the ASCII printer as specified on the workstation configuration menu.

A fairly wide variety of line density values is available. The most common are: 72 LPI, 48 LPI, 24 LPI, 12 LPI, 9.6 LPI, 8 LPI, 6 LPI, 5.33 LPI, 4 LPI, 3 LPI and 1 line/cm. If an unimplemented value is requested, ES32 will approximate the requested value.

The OCL PRINT procedure on S/36 and printer files on S/38 and AS/400 are fully supported, allowing changes to be made to character density, line density and page length. If used under DW/36, TM/38 or Office/400, bold, underline and overstrike are available since they are achieved by overprinting.

These printers are best suited for applications that do not require advanced highlighting features. It should be noted that ASCII printers capable of operation faster than 2000 characters per second may obtain higher speeds (up to 30% faster) with the 5256, 4214 or 5219 emulations, due partially to the twinax protocol implementation on the System/3X or AS/400.

When configuring the System/3X or AS/400, use the following device codes for this type of printer:

System/34	2P
System/36	PC or BB (5224 only) or CD (5225 only)
System/38	DEVTYPE (5224) MODEL (2) or DEVTYPE (5225) MODEL (4)
AS/400	TYPE (5224) MODEL (2) or TYPE (5225) MODEL (4)

5219 / 3812 Printer

This printer is one of the most sophisticated printers available for the System/3X or AS/400. It supports several character densities, line densities, fonts and highlighting effects (underline, overstrike, superscript, subscript, etc.).

The page length can be specified either in inches or as the number of lines per page. The page width can be specified either in inches or as the number of characters per line. If an attempt is made to print beyond the horizontal limits, the printer may insert an automatic New Line, if desired. Similarly, if an attempt is made to print beyond the vertical limits, an automatic Form Feed may be inserted, if desired.

The valid character density values are 10, 12 and 15 CPI.

Available line density values are 48 LPI, 24 LPI, 12 LPI, 9.6 LPI, 8 LPI, 6 LPI, 5.33 LPI, 4 LPI, 3 LPI and 1 line/cm.

The OCL PRINT procedure on System/36 does not support 5219 printers. This is a System/36 limitation. Print files on System/38 and AS/400 are fully supported. Special highlighting effects include tab, underline, subscript, superscript, indentation control and overstrike. Bold is also available by either overprinting or using the BES/EES SCS commands.

This printer is best suited for word processing applications and, on the System/36, data processing applications that do not require change of page parameters (unless the DP program itself produces the required SCS commands).

When configuring the System/3X or AS/400, use the following device codes for this type of printer:

System/34	3P
System/36	PD or DA
System/38	DEVTYPE (5219) MODEL (D1)
AS/400	TYPE (5219) MODEL (D1)

NOTE: The 3812 is a laser printer that emulates a 5219 printer. Because of the additional capabilities that a laser printer has, more features are possible, including improved font handling. This emulation does not support IPDS (Intelligent Printer Data Stream).

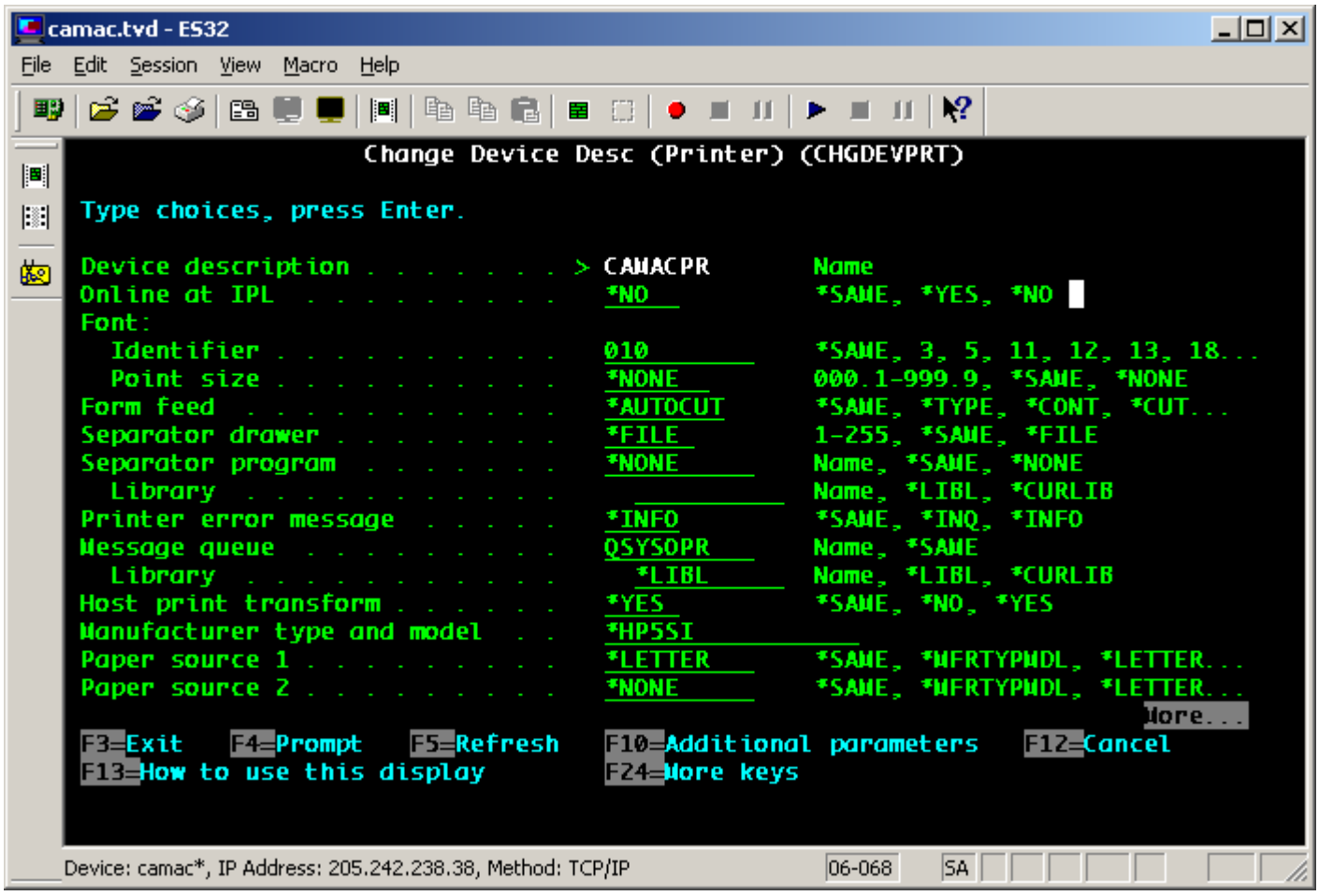
Appendix C

AS400 Host Print Transform

What is Host Print Transform?

In order to make a physical connection to an AS400; you have to tell the host that the printer is one of the many AS400 printer models. This defines the connectivity method, speed, and type of printer for the host. The AS400's Host Print Transform feature allows you to tell the AS400 what kind of printer is actually attached. Once the AS400 knows this, it can speak to the printer in its native language, or the language that the printer is emulating.

You will select the formatting attributes for the job at the AS400. The AS400 will format the data for the specific printer. It will send the data to the printer using ASCII Transparency. You must know what emulation your printer is set to. Nearly all printers can be configured to emulation at a few other printers. The printer must be configured to match the 'manufacturer type and model' that you select at the AS400. One of the most common printer emulations is the IBM Pro Printer (which is *IBM42011 for the IBM 4201-1 Proprinter).



How do you enable Host Print Transform on the AS400?

For TDLC, you must enable it at the AS/400 manually. This is the procedure.

1) On your AS400, Using the **CHGDEVPRT** command, set:

   Host print transform . . . . .. *YES

   Manufacturer type and model. . *SAME

2) Place the cursor on the "**Manufacturer type and model. . *SAME**" line.

   Press **F4**, which will bring up the Specify Value for Parameter MFRTYPMDL. This is where you can see your choices for Manufacturer type and model. For example: *IBM2380, *HPII, *HP5SI...

3) If you want more information on what one of these choices support, you can use F1 on this screen. You do not have to find your exact model. For instance, if you have an HP printer it is likely that any of the lower level HP selections will work, like HPII or HPIII, because all HP printers support Hewlett Packard printer language PCL, and the difference between them is in the options that are supported.

4) Once you have chosen a printer to try, you must type that in on the Manufacturer type and model field.

What does the AS400 do when Host Print Transform is select?

The AS400 Operating System inserts a code to tell the peripheral that the data is ASCII instead of EBCDIC, and it will send the data as ASCII, which the printer control codes that are native to the printer that was selected. In the 5250 to S/36, S/38, & AS/400 Product Attachment Information, IBM refers to the command as ASCII Transparent (ATRN), format = x'03nnxx'. nn is the number of characters (in hex) to be transferred.

Is there anything that I have to do in the PC printer setup to enable Host Print Transform?

Yes, if you use Host Print Transform, you should go to the Windows printer settings and change the Spool Settings to RAW where it will Print Directly to Printer.

To change the spool settings, follow these steps:

1) Click the Start button, point to Settings, and click Control Panel.

2) Double-click the Printers icon.

3) Use the right mouse button to click the printer icon, and then click Properties on the menu that appears.

4) For Win95, Win98, or WinME, click the Details tab and the Spool Settings button.

5) For Windows XP or Windows 2000, click the Advanced tab.

6) Select Print directly to printer.

Appendix D

Troubleshooting

Indicators

When your signon screen does not come up. You will need to look at the following indicators to determine what the problem is:

- ✓ Cursor position: upper left, upper right, bouncing from upper left to upper right.
- ✓ Status indicators at the bottom of the screen. SA, II.
- ✓ Error codes in the upper or lower left corner.
- ✓ Screen color: white, gray with a dancing terminal, or black.

Cursor Positions:

- o Upper right (usually accompanied by the dancing terminal) means that you do not have a twinax connection.
- o Upper left means that you have connected to the host, but your session is varied off.
- o Bouncing from upper left to upper right means that you have a workstation address conflict or a device mismatch.

Status Indicators:

- o **24-002** indicates the cursor is in the lower left position of the screen.
- o **SA** means **Station Available**. If this is showing, but you do not have a signon screen, it would indicate that you are connected, but the controller is down.
- o **II** means **Input Inhibited**. You are connected to the host, but an error prevents you from communicating. Pressing Error Reset (Ctrl) will clear this. If it recurs, do an Erase All Input, then Error Reset.
- o **IM** is for **Insert Mode**. This allows you to insert new text, push existing text to the right.
- o **KS** is for **Key Shift**.
- o **MW** indicates that you have a **Message Waiting**.

Error Codes: covered in a table in Appendix E.

Screen Color:

- o **White** indicates that you have not performed Session – Connect.
- o **Gray** indicates that the hardware has not connected.

- **Black** means that you are connected and the problem is either a device mismatch or problem at the host.

Problem Guide

This section contains the meaning and solutions to problems and error messages, and answers to questions.

ES/PCI Error Messages

These are the error messages that one might encounter when installing or running the ES/PCI emulation software.

ERROR MESSAGE: "You have not configured any emulation devices. You must configure at least one device before you can use the emulator. OK to configure now."

CAUSE: This could happen if you did not properly name your device. You must name it. Do not use spaces or funny characters.
CAUSE: This points to a mismatch between the hardware driver and the connection method driver. You may have installed the wrong hardware driver. These are the drivers that must be installed when you first bring up the PC after installing the card, but before running the setup, where you install the connection method driver. It could also be a hardware conflict or a hardware failure.
CAUSE: This could be caused by an interrupt conflict the Windows Power Management module.

SOLUTION: Click on New Device. It will bring up the Configuration Properties menu. Select Display or Printer if it is not already selected, and give the device a name that is indicative on the connection method and device, like 'DSP01'0100 or 'PRT010101'. Do not use spaces or funny characters.
SOLUTION: Check the hardware driver for problems in the Device Manager. See Chapter 1.
SOLUTION: Go into the BIOS and disable Power Management functions. After you reboot, go into the Control Panel, and change all of the power settings to Never.

ERROR MESSAGE: The **Device Manager** tab), for the **Twinax Adapter** it says:" **This device has a problem: Code=10 (0xA): : This device is not present, not working properly, or does not have all the drivers installed.**"

CAUSE: You either have not installed the hardware driver, which is located on the CDROM in the INF folder, or you have a hardware failure.

SOLUTION:
Install the latest hardware driver, found at http://www.nlynx.com/html/tb-espcidrivers.htm
If that does not solve the problem, call 1-888-NLynx67 to make a warranty claim. Have your serial number handy. It is on the card guide where you can see it from the back of the PC.

ERROR MESSAGE: The **Device Manager** tab), for the **Twinax Adapter** it says: "**Other PCI Bridge**".

CAUSE: You have a hardware failure.

SOLUTION: Call 1-888-NLynx67 to make a warranty claim. Have your serial number handy. It is on the card guide where you can see it from the back of the PC.

ERROR MESSAGE: After it is installed, it errors out and reports "**Unable to find configuration information for connection method named**".

CAUSE: Several things can cause this problem. It points to a problem with the hardware or drivers. It could be the wrong drivers were chosen. The Win98, WinNT, and Win2K all use the driver dated **4/19/2000**. If you see the 5/20/1999, you have the ClientAccess version.

SOLUTION: Uninstall the ES32 software.
1) Click the **Start** button then **Programs** then **ES32** and then **Uninstall.**
2) **Remove** the (hardware) driver:
3) Click the **Start** button then **Settings** then **Control Panel**.
4) Click **System** and the **Device Manager** tab.
5) Double-click **Twinax Adapters** and it should show the **NLynx Twinax Adapter**.
6) Click once on it to select it and then click on the **Remove** button the bottom of the window.
7) Recycle power.
8) Reinstall using the directions on the CD-ROM **ESPCI.doc** being careful to select the correct driver for your operating system, which is the one in the **INF/Win*XX*** folder.

ERROR MESSAGE: After it is installed, it errors out and reports "**Unable to start session**" or "**Error FFFB.. VDI_Err_No_Free_Session = -5 FFFB;Error - No Free Session**".

CAUSE: You installed the ClientAccess version of software from the ES32CA folder.

SOLUTION: Uninstall the ES32CA software.
1) Click the **Start** button then **Programs** then **ES32** and then **Uninstall.**
2) Recycle power.
3) Reinstall from the **ES32** folder.

ERROR MESSAGE: Flash screen comes up, then "**DIOTWIN OVERLAP IO OPERATION IS IN PROGRESS**". Then it gives a message: "**UNABLE TO FIND BOARD SERVICE DRIVER**".

CAUSE: This would be caused by trying to use the 3XTwin setup, instead of the ES/PCI setup. You can not run both cards in the same machine.

SOLUTION: Uninstall all previous versions of ES/95 or ES32 software and install the software for the card that you intend to use.

ERROR MESSAGE: Popup screen: "**FAILED TO UPDATE SYSTEM REGISTRY**" and On ES32 shutdown: "**Unable to save C:\program files\es32***.TVD Error: (5) Access is denied.**" The two options are Retry and Cancel. Only cancel works.

CAUSE: Windows 2000 Professional and Windows XP has an option to prevent users from writing to the registry.

SOLUTION: 1) No harm is done and these error messages can be ignored. 2) Define all users of the ES/PCI card as at least a Standard user in the Power User Group under the Control Panel's Users and Password settings for Group Membership or ignore these messages, 3) upgrade to version 5.0.1.6 or greater or 5) you can get rid of the ES32 shutdown message by changing the ES32 Display option: "Do not save customizations on exit". Do this by selecting File/Configure, then select the Options button.

ERROR MESSAGE: "**System Standby Failed**. The device driver for the 'NLYNX PCI Twinax Adapter' device is preventing the machine from entering standby. Contact your vendor." OR "The device driver for the 'Nlynx PCI Twinax Adapter'' device is preventing the machine from entering hibernation. Please close all applications and try again. If the problem persists, you may need to update this driver." This occurs even when the software is not running.

CAUSE: The ES/PCI's driver software is always active. When the ES/PCI card's driver is loaded, at PC boot time, and loads the microcode onto the board, it starts the session to the AS/400.

If you go to hibernation mode then there is no power on the PC and the PCI board will be unable to answer polls from the AS/400. If that is the case then the session will be disconnected, and will have to be restarted when the PC comes out of hibernation mode. This will be unacceptable in the AS/400 environment. The PCI board has to answer polls all the time even if the session is not active.

SOLUTION: On Windows 2000 and XP , you would have to disable standby and hibernation. You could use a password on your screen saver for security.

On NT you can stop this by changing the start up of the device from automatic to manual.

ERROR MESSAGE: "Unable to write this configuration please re-configure" or "**Unable to write configuration file**"

CAUSE: You do not have the hardware drivers installed. You must install the correct driver for your operating system. This happens when you first put the card in.

SOLUTION:
Remove the card from the Device Manager and re-start the PC. The windows Add New Hardware Wizard will appear. Insert the ES/PCI CD into CD drive and follow the Wizard screens.
When you get the message "Please insert the disk labeled Win xx Drivers Disk" Click OK and Browse to the ES/PCI CD. Browse to the **INF** folder and then select the folder for your Windows Operating System version. When the message "Copy files from Windows" displays the correct path for the .inf file Click OK. See more specific instructions at the beginning of this manual.

ERROR MESSAGE: When I try to open my session, it says, **"The device name *xxxxx* is in use"**.

CAUSE: If you open *display2* from *display1* then close down *display2* last AND you also have the parameter "**Open last file when started**" enabled, it will make *display1* open *display2*.

SOLUTION: Open Notepad (**Start/Programs/Accessories/NOTEPAD**)
Open the TVD file that you open first. (**File/Open,** change the **Files of Type** to **All Files**, then browse to **Desktop** (click on the desktop icon at the top), then **My Computer,** select the **C:** drive**,** then **Program files**, then **ES32/** and finally *display1***.TVD**
It will bring up a file that has a parameter HostLinkName= *display1* at the top. This needs to match the name of the TVD file.

PREVENTION: After bringing up the Display Emulator, go to each of your sessions and select the **Session/Properties** menu.
Select the **General** tab.
Remove the check from "**Open last file when started**"

PROBLEM: You are doing a new installation or have upgraded the operating system. After you install the software, you start the Display Emulator and when it brings me to the "Configure Connection Method and Devices" window, there are no devices under "This Computer" or the device that is there is X'd out. You can't select Add/Remove Method or New Device, because they are grayed.

CAUSE: The ES/PCI hardware driver for the operating system on this PC is not installed. Windows could have loaded it's own default, or maybe none at all.

If you are using Windows 98, Windows 2000, or XP, the driver file should be NLTwinax.sys.

If you are using Client Access on Windows 95 or Windows 98, the driver file should be PCITwin.VxD.

If you are using Win95, or WinNT4, the driver file should be PCITwin.VxD.

SOLUTION:
Reinstall the hardware driver. The hardware driver is located in the INF folder on the CDROM. You should uninstall and delete any incorrect drivers. Please follow the Preparations Instructions in Chapter 1.

PROBLEM: It did not bring up the Add Hardware Wizard when the card was inserted. After you re-boot the PC, it is registering a hardware conflict. This could be something like "FDC Failure" or it would lock up while trying to load 'msmouse.vxd'. It may freeze up.

CAUSE: BIOS PnP is set to No for the PCI slot that you put the card in.

SOLUTION: You must enable **Plug'n'Play** in the **BIOS** for the PCI slot that the ES/PCI card is in. Power up the PC and go into the **BIOS SETUP**. Usually you will press the Del key right after power-up. Here is is listing of some of the key combinations used to enter the BIOS setup on startup. You must do this during the first few seconds after you turn on power. If you see the Windows startup, it's too late.
Award Bios=Ctrl-Alt-Esc
AMI Bios and Award Bios and others=**Del (most common)**
Compaq=F10
Dell=Ctrl-Alt-Enter
Dell=Reset(Twice)
HP Pavillion= Esc then F1
NEC=F2
Phoenix Bios=Ctrl-Alt-S
Phoenix Bios=Ctrl-Alt-Ins
PS/2=Ctrl-Alt-?
PS/2=Ins
Toshiba=Esc
Toshiba=F1

With the Award BIOS you will go to **PNP/PCI CONFIGURATION** and set **PnP OS Installed** to **Yes**.

QUESTION: How do I figure out what name it will be provided by the host?

ANSWER: It depends on whether you are running SSP (Advanced System/36) or OS/400 (AS/400's)

If the OS is SSP, you use CNFIGSSP to configure or see what the device name is.
http://www.nlynx.com/html/tb-configsys36.htm

If OS/400, then the answer depends on whether you use autoconfigure (system value: QAUTOCFG) and if you do, what the device naming parameter is set to. (system value: QDEVNAMING). QDEVNAMING must be one of the following values:

- *NORMAL. Naming conventions must follow AS/400 standards. The following are examples of names following AS/400 standards:
  Display Stations DSP01, DSP02 Printer PRT01, PRT02
- *S36. Naming conventions should follow System/36 standards. The following are examples of names following System/36 standards:
  Display Stations W1, W2 Printer P1, P2
- DEVADR. Device names are derived from device addresses. The following are examples of names following the device address naming conventions:
  Display Stations DSP010000, DSP010403 Printer PRT010302, PRT010502

PROBLEM: You upgraded your Windows operating system to Windows 2000. When you start the Display Emulator and when it brings me to the "**Configure Connection Method and Devices**" window, there are no devices under "**This Computer"** or the device that is there is X'd out.

CAUSE: The ES/PCI driver needs to be correct for the Windows operating system on this PC.

SOLUTION: Go to the Device Manager for that operating system and check what driver you have.

If you are using **Win98, Windows Millenium, or Windows 2000,** the driver should be **NLTwinax.sys**.
If you are using **Client Access** on any operating system, the driver file should be **PCITwin.VxD**.

If you are using **Win95, or WinNT4**, the driver file should be **PCITwin.VxD**.

Latest and greatest driver is located at:
http://www.nlynx.com/html/tb-espcidrivers.htm

PROBLEM: You ran the configuration and there was no conflict, no problems. You get to the emulation screen, but it is blank. The SA (Station Available) indicator is lit. The cursor stays upper left.

CAUSE: Top left means that your station is not varied on. This can happen if you disconnect when you are not at the signon screen.

SOLUTION: If the last device using this station address crashed, the station address will be varied off. Ask the System Administrator to vary your device on. This may require varying off, then back on.

PROBLEM: You ran the configuration and there were no conflicts. You get the black emulation screen, but it is blank. The SA (Station Available) indicator is not lit. The cursor stays upper right.

CAUSE: No Station Available indicates that the card does not have a connection to the Midrange host. You probably have a twinax connection, but there is not a connection to the host. This could be a controller problem if you are at a remote site.

SOLUTION(s): Make certain the controller is connected to the host and varied on.

PROBLEM: You ran the configuration and there were no conflicts. When you go to connect, the little PC is just dancing with the AS/400 but it does not give the black screen. The cursor is in the upper right.

CAUSE: This indicates that you do not have a connection to the twinax line.

SOLUTION(s):

- ✓ Make certain that the ES/PCI card is screwed in tightly. Twinax cables are heavy enough to pull them out of the socket.
- ✓ Make certain that the T-cable is screwed on tightly. The T-cable should be black.
- ✓ Check the Twinax cable. Make certain there are no bent or recessed pins, and that it is keyed correctly. Swap if possible.
- ✓ Check the terminate switch on any terminals before and after your connection on a daisy chain. The last device, furthest from the host, and only the last device, must terminate the Twinax line. Most T-cables self-terminate.
- ✓ If you have baluns and CAT5 or CAT6 wiring, make the CAT5 wire must have a minimum of 15 feet. Make certain that the polarity and pins of your baluns match your CAT5 wiring.
- ✓ Make certain that you have a valid workstation address and that the device type matches the host or that the host is set to auto configure. WRKSYSVAL QAUTOCFG
- ✓ Check for system error messages. If you are connected to a remote controller, it might be varied off.
- ✓ Trying swapping with known good hardware.
- ✓ Make certain that the device type for the terminal that worked, is the same as the terminal that you configure the ES/PCI to emulate.

PROBLEM: You ran the configuration and there were no conflicts. You get your signon screen, but it goes away and comes back, goes away and comes back. Someone is screaming in the background.

CAUSE: You have taken the same WorkStation Address as someone else on the same Twinax line that you are on.

SOLUTION(s): Ask the System Administrator what Work Station Addresses are available. Twinax station addresses are numbered from 0-6. On the AS/400 this is the Switch setting. You must follow the Twinax cable and check each devices switch or configuration to verify what address(es) each device is taking. Many devices will take more than one station address.

PROBLEM: You get your emulation screen, but it is gray, not black, with the cursor in the upper left. The SA (Station Available) indicator is on. Top left means that your station is not varied on. Host shows Vary On Pending. No system messages.

CAUSE: The SA indicates that we can see the host, but the cursor in the upper left indicates the host did not see us. This could be bad hardware, but it is probably a cable termination problem.

SOLUTION(s):
If you are daisy-chaining, make certain that the last device is terminating the line. You cannot daisy-chain if you are using CAT5 wiring and baluns.
Double-check the twinax connections. Make certain the twinax pins are not recessed. Make certain the T-cable is screwed on tight.

PROBLEM: You want to change the IRQ from 3 to 5. It is causing a conflict with the modem or something.

CAUSE: You cannot change the settings because that is a PnP board and Windows controls the resources.

SOLUTION: Move to a different PCI slot. You can go into the Device Manager, and remove the check from Use automatic settings, but this is for experts. Not recommended. Not supported.

PROBLEM: It is not getting a connection. No cursor is visible. Attached to a remote 5494 controller. Display is configured as 3477.

CAUSE: Some controllers do not support 3477 emulation.

SOLUTION: Change the description to 3197C.

PROBLEM:
After installing the software, you cannot select the Host Address that you need.

CAUSE: Having a "TVD" file with the same host address still resident on your PC would cause this.

SOLUTION: Uninstall the ES32 software. **Start/Programs/ES32/Uninstall**. (Do not recycle yet).
Remove the driver. **Start/Settings/Control Panel/System/Device Manager.** Select the (NLynx) **Twinax Adapter and select Remove**. (Do not recycle yet).
Start > Find > Files or Folders and put ***.TVD** in the **Named** field, and **Look in** C: drive. Delete all of the *.TVD files that it finds. (Do not recycle yet).
Start > Find > Files or Folders and put ***.TVP** in the **Named** field, and **Look in** C: drive. Delete all of the *.TVP files that it finds.
Recycle power. Reinstall.

PROBLEM: IRQ conflicts. This category of problem can show itself in many ways. For example: after installing the ES/PCI card, sound cards or network cards no longer work or general protection faults occur. Sometimes a problem might be tied to the start bar.

CAUSE: IRQ or Interrupt is the name of an input found on the processors which causes the processor to suspend normal instruction execution temporarily and to start executing an interrupt handler routine. Most devices, like sound cards, network cards, and so forth use these.

If two devices try to select the same IRQ, or if no IRQ remain available, then software conflicts occur.

IRQ conflicts can be difficult to resolve, because they almost always involve getting into the BIOS and there are several different BIOS formats, and because the conflicts inherently will involve multiple manufacturers, neither of whom, knows all about the other device.

POTENTIAL SOLUTIONS:

1) *Sometimes* there is a setting in the BIOS for 'PnP OS -- Yes or No?' This option is basically asking if you have a Plug and Play Operating System, (like Win98), which you do. If you select No, the BIOS attempts to perform the Plug n Play operation. While it is technically best to answer this honestly, sometimes you can shift things by changing the answer to the question.

2) Update your PC to the latest version of Microsoft Windows for the Operating System that you are using.

PROBLEM: PC locking up. After many boot retries the PC finally booted okay.

CAUSE: Version 5.0.1.1. or below.

SOLUTION: Upgrade

PROBLEM: It keeps seeing the Windows XP Professional PC as Windows 95.

CAUSE: The emuapp32 application is set to Compatibility for Win95.

SOLUTION: Right-click on the Emuapp32 in C:\Program Files\es32. Selected the Compatibility tab, then check Run this in compatibility for Windows 2000.

Session Questions:

QUESTION: How do I add another session?

ANSWER:
1) Close the sessions down by signing off the host and then selecting **Session – Disconnect**.
2) Click the **Configure** icon, (or select File, then Menu) to bring up the **Configuration Properties** window.
3) Give it a name!
4) Select **Display** (or Printer).
5) Select the type of display or printer.
6) Select an unused **Host Address**.
7) When you are done configuring it, click **OK**.

QUESTION: What are the requirements of the device name?

ANSWER: It is recommended that you use a device name that has part of your IP Address or Work Station Address at the end. For TN5250E sessions where the name provided is shown on the AS/400, the initials or name of the user is helpful. It is also useful to reference the application that the session is usually used for.

- You can use any number and letter combinations.
- You can use the characters @ $ and _.
- There is a maximum number of 10 characters for TN5250E sessions.
- The characters ? < > , . / \ | and * are not accepted.
- The characters ~ ! % ^ & ( ) - + = { } [ ] are accepted, but should be avoided for ES/TCP because the character will change to # at the AS/400.
- You can not use - (dash).
- You can not use spaces for TN5250E sessions.

QUESTION: How do I add another session if I do not have any unused station addresses left?

ANSWER: Open your first session and sign on.
Do a **System Request** then put a **1** down there where the lines are:
1||||||

QUESTION: Why don't I get the big red triangle over the left corner of my TVD or TVP icon on my other open sessions?

ANSWER: If you opened them from the TVD or TVP file, you would, but if you open them from the open Display Emulator session, using File/Open Display or the Open Another Display icon, it will not put the red triangle there.

QUESTION 8: My shortcuts keep pulling up Untitled.
CAUSE: Invalid name.
SOLUTION: Do not use a name with more than ten characters or a -.

Screen Questions:

QUESTION: I do not have access to the menu bars, how do I get my screen out of full screen mode?

ANSWER: Right-click in the middle of the screen.
Remove the check from **Full Screen**.

QUESTION: Every time I start the software, I do not have access to the menu bars, how do I get my screen out of full screen mode?

ANSWER: Right-click in the middle of the screen.
Remove the check from **Full Screen**.
Now click on the **Sessions** menu and select **Properties**.
Click on the **Display** tab.
Remove the check from **Full Screen Mode after connection**.

Font Questions:

QUESTION: My local (not host) screen prints print out garbage.

CAUSE: The font that you have chosen in the ES32 setup is either not a TTF (True Type Font) or is not loaded in the printer.

SOLUTION: All printer interfaces are different in Windows, but some printers have an option in the printer driver to print fonts from the printer or direct from the application.

SOLUTION: Choose a different font. In ES32, click on Session, and select Properties, the Font tab.

QUESTION: Why does it not retain the column formatting when I cut and paste into a Word doc?

ANSWER: It assumes the font of the document that you paste into. If you choose EBCDIC it will regain the columns. To see the other fonts that work, you can to the Session menu, click Properties. Click the Font tab.

QUESTION: How do I get it to show all 132 columns?

ANSWER: You must select a model to emulate that supports wide screens. These would be 3180, 3197D, or 3477. This happens automatically with ES/TCP when you select 132 columns.
Select **File** then **Configure**.
Select your display. If it is not showing, click the **+** on the display adapter.
Click on **Properties**, it should bring up the **Configuration Properties** window.

QUESTION: I selected 3197D but I am unable to achieve a 132-col display.

ANSWER: Check your font selection.
Select **Session**, then **Properties**
Select the **Font** tab.
Make certain that the "**Scale font to fit Window**" is checked.

QUESTION: Why are there so few font options in ES32?

ANSWER: The fonts have to be True Type and monospaced (or fixed spacing) for IBM screen emulation. Every character has to take up the same amount of space. Most fonts in use are not monospaced. They have to be created internally.

Keyboard Questions:

QUESTION: How do I do re-map the keyboard?

ANSWER: Click on the **Sessions** menu and select **Properties**.
Click on the **Keyboard** tab.
From the list of Host Keys, select the one you want to map to your keyboard.
If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To**.
Click **Set**.
Choose a different key, or a key together with Control, Alt, or Shift to remap it to and press that key or key combination and click **OK**.

QUESTION: I wanted to make the left ALT key the error reset, in addition to the left control (CTRL). I also wanted to make the right ALT key the Newline key. Whenever I try to do that, it expects ALT + another key. Can I do what I want to do?

ANSWER: No, the Alt key by itself has a System 36 function so it can not be used by itself, except for the System 36 function. Not only that, but some of the old programs like DisplayWrite used ALT letter combinations, for example ALT C to center. This particular function often will not work if the PC has a program trap set for that key scan.

QUESTION: How do I do things like System Request and Command 13-24?

ANSWER: Easiest way is to click **View** then put a check in **Command Keys**, then click it again and put a check in **Function Keys**. After that you can use your mouse.
Alternative method is to figure out where everything is mapped to the keyboard, by selecting the **Sessions** menu and select **Properties**.
Click on the **Keyboard** tab.

QUESTION: When I try to use the **/**, *****, **-**, and **+**, on the numeric keypad, it does not work, how do I do re-map the keyboard to use these characters?

ANSWER: Those characters are assigned by default to the Duplicate, Jump, Field Minus, and Field Plus functions.
Click on the **Sessions** menu and select **Properties**.
Click on the **Keyboard** tab.
From the list of Host Keys, select the one you want to map to your keyboard.
If the host function is currently mapped to your keyboard, its key combination will display under **Currently Set To**. Click **Set** on the Host Key that you want to change.
Either just select **Remove** or Choose a different key, or a key together with Control, Alt, or Shift to remap it to and press that key or key combination and click **OK**.

QUESTION: How do I perform ALT-letter combinations required by DisplayWrite36 to do functions like ALT B for Bold.

ANSWER: The left CTRL key functions as either the CMD key or the ALT key for most of these functions. This will work for most cases, except where the Windows OS interprets the Control/Key sequence first. The Keyboard Driver handles this. Microsoft or the Keyboard vendor writes keyboard Driver. Functions that would cause problems are Control/C, Control/P, and Control/V.

QUESTION: When you use DisplayWrite36, Alt/c or Ctrl/c are supposed to center text, and Alt/p or Ctrl/p is supposed to insert a page-end. These functions do not work. All the other Alt or Ctrl key combinations the application uses do work.

CAUSE: Windows OS interprets the Control/Key sequence first. Functions that would cause problems are Ctrl/C, Ctrl/P, and Ctrl/V, because these are standard Copy, Print, and Paste.

SOLUTION: Use the combinations:
Shift/Ctrl/ (and the appropriate letter) to get past the Windows trap and be interpreted as the appropriate DisplayWrite36 function. For Example:
Shift/Ctrl/C will product CMD-c which is what is needed to produce the centering command.

QUESTION: Where is the cent sign key on the ES32 emulation keyboard? Also, where is the key that looks like an upper right corner, looks like a 7 except it is a right angle with equal sides?

ANSWER: The cent sign and logical not are not defined on the PC keyboard so there is a workaround called 'executing a hex value'. In the example below, the upper right corner symbol is a logical not and its hex value is 5F. To execute a hex value on the ES32 emulation software (in this case you are trying to execute a logical NOT or hex 5F) do the following:
1. Get the emulation connected and signed on.
Go to where you want to place a hex value, click the **right-side mouse** button.
Select **Function Keys** and then **Hex**.
Using the number pad of the keyboard select '**5**'.
Using the alpha keys select '**F**'.
This will produce the logical NOT sign. All hex values can be done this way. The hex value for the cent sign is 4A.
To avoid steps 1-3, you can define a key as the Hex key, by doing the following steps:
1. Go to the Properties menu by pressing the Properties icon or select **Session**, then **Properties**.
2. Select the **Keyboard** tab.
3. Scroll the **Host Key** window down to **Hex**, and click on it to select the key that you want to have as your 'Hex' key.
4. Click **Set**.
5. Press a key (that will become your Hex key).
6. Click **OK**.
7. Click **OK** again.

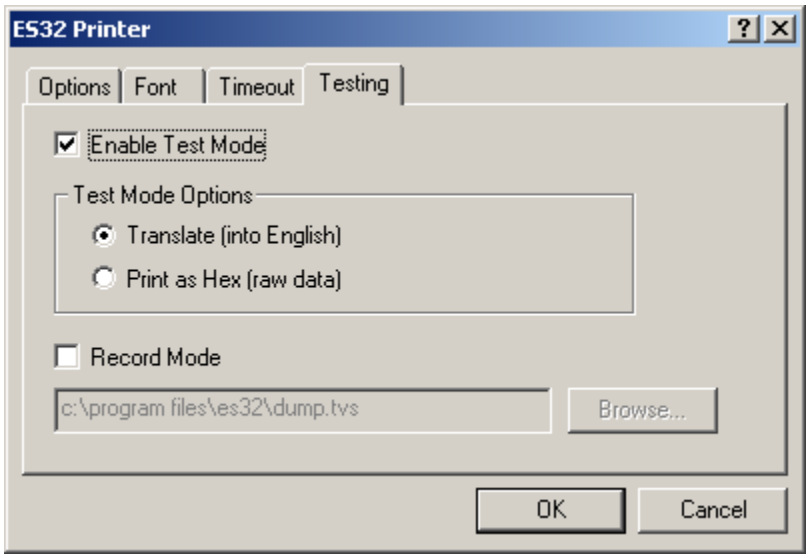
Printer Troubleshooting

Resolving printer problems is usually a case of tweaking parameters here and there and examining the output. Typically this is done in the application or the printer configuration at the AS/400. This is not our area of expertise or responsibility. If you believe that the terminal is doing something wrong. Technical Support can examine the output and make a recommendation. This is what we will need after each attempt.

1. Determine what IBM printer you are emulating and see if it is the best printer for your purposes.

2. Determine method of control you will use. If modifying the data output does not have any effect, then make certain that you have proper set up the control of the printer at that point.

3. Look at the printer definition on the AS/400 and the job definition on the AS/400. There are many places for the AS/400 to affect the job output, make certain that you have explored them all.



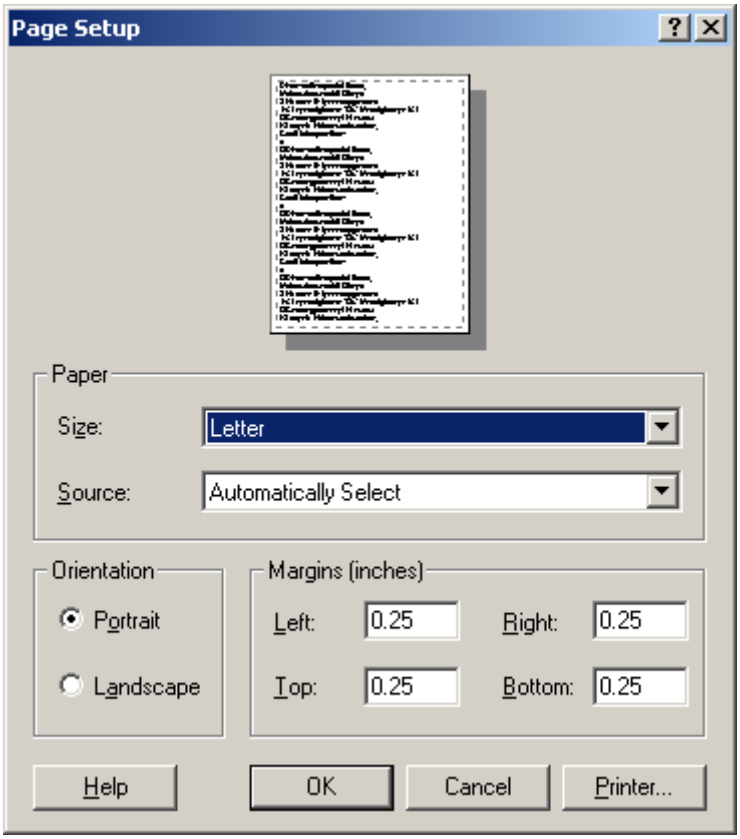
Get a printer hex dump from ES32:

- Put the host job that you are having a problem with in save mode so that you can send the same job a few times.
- Send that job to get a sample of failing output.
- In the ES32 printer control panel, click on the **Online** button to take the interface offline. The green light will go out.
- Click the **Properties** button and select the **Testing** tab.
- Put a check in **Enable Test Mode**.
- Either put a check in **Translate** (into English). This will show the printer commands that were sent or put a check in **Print as Hex** (raw data).
- Click the **OK** button, and then the **Online** button to put the interface back online. The 'green light' will come back on.
- Re-submit the AS/400 job that you put in save mode.
- Examine the failing output and the translated output. This may help you to see what commands are being sent and find the problem.
- In the ES32 printer control panel, click on the **Online** button to take the interface offline. The green light will go out.

- Click the **Properties** button and select the **Testing** tab.
- Remove the check from **Enable Test Mode**.
- Click the **OK** button, and then the **Online** button to put the interface back online. The 'green light' will come back on.

Technical Support can help you to examine the traces. Fax samples of the failure (marked up as necessary) and the test output to 512-869-2621. Alternately scan and email to support@ringdale.com.

It may also be helpful for technical support to see the host definition and the printer definition. You can print these by using **Alt** / **Print Screen** and either printing the result or paste into an email, when on the appropriate screens.



Other Questions:

QUESTION: Does your software under printer configurations, goes it have an option to print to a file instead of a printer?

ANSWER: ES32 uses the Windows Driver Interface. The Windows Driver Interface has an option where you can create a file on disk. The procedure is to add a printer that does this and print to that printer:
Click the **Start** button then select **Settings** and then **Printers**. This will bring up the **Printers** folder.
Double-click on **Add Printer** to bring up the **Add Printer Wizard**.
Click the **Next** button and it gives you an option of Local or Network printer. This really doesn't matter, click **Next** again.
Select the printer (usually you will choose **Generic/Text Only**).
There is an option to select one of the "**Available ports**" where you will see the option to select **FILE: Creates a file on disk.**
After creating this printer, bring up the ES32 printer interface using **File** / **Open Printer.**
Click the **Online** button to take the printer offline (green 'light' goes out).
Click the **Page Setup** button.
In the lower right, click the **Printer** button.
Select the **Generic/Text Only**.

QUESTION: How do I get help for myself?

ANSWER: Click on the Help menu at the top right.

More documents like this can be located on our web-site at
http://www.nlynx.com/html/technicalbulletins.htm

Appendix E

IBM 5250 Error Codes

Error Codes are four or six digit hexadecimal codes that may appear on the error line in your terminal workstation display during operation. These codes are sent from the host system.

Refer to the Error Code Range Chart below, and then go the appropriate chart.

Error Code Range	Description of Error Code and Suggested Response
0000 to 003F	An operator error occurred during an entry operation Locate the exact code and follow the instructions. See Operator Entry Errors Codes
0040 to 005F	An error occurred on the communication network during controller/host communication. Check the modems, cables, line and connections to the host system.
0060 to 0069	An operation error occurred when trying Ideographic Support. See Ideographic Support Error Codes.
0070 to 007F	An operator error occurred. See Text Entry Assist Error Codes while using the text processing function.
0090 to 009F	A display station operator Error Codes. See Host Support System caused an error that involves the host system.
100000 to 10FFFF	A display station operator attempted to enter an incorrect or invalid, X.25 command or parameters from the keyboard. See X.25 Error Codes
110000 to 1FFFFF	An error was detected by the DTE or DCE X.25 Network. See sections Call Systems and try to re-establish the communications.
400000 to 400900	Linking errors.
400A00 to 411300	XID Errors
420000 to 441200	LU6.2 Errors
540404 to 540408	LAN AS/400 attachment errors

0000 to 0038, Operator Entry Error Codes

Refer to the following Operator Entry Error Code Chart if the code displayed is in the range from 0000 through 003F. Note the following:

1. If an operator entry error occurs, further input tasks are suspended until the problem is resolved. The error might be an invalid key, input or entering data at too high a rate.
2. In some applications you can press the HELP key to get more information about the nature of the error.
3. To recover from the error, press the **Error Reset** key at the operator workstation involved and then the ***Field-***, ***Field+***, or ***Field Exit*** key to blank the field.

Operator Entry Error Code Chart

Error Code	Error Description and Suggested Recovery
0000	HELP Key Not Allowed.
0001	Keyboard Overrun. Entering information at too high a rate.
0002	Invalid Scan Code.
0003	Invalid Command/PF Key
0004	Data Not Allowed in This Field
0005	Cursor in Protected Area of Display.
0006	Key Following SYS REQ Key Not Valid.
0007	Mandatory Enter Field - Must Enter Data
0008	This Field Must Have Alphabetic Characters
0009	This Field Must Have Numeric Characters
0010	Only Characters 0 Through 9 Permitted.
0011	Key For Sign Position of Field Not Valid.
0012	Insert mode--no room to insert data.
0013	Insert Mode - Only Data Keys Permitted
0014	Mandatory Fill Field - Must Fill to Exit
0015	Modulo 10 or 11 Check Digit Error. You entered data into a self-check field.
0016	F - Key Not Valid in this field
0017	To recover - press the ERROR RESET key. Enter data to the end of the field or move the cursor to the start of the field and use
0018	Key Used to exit this field not valid
0019	DUP or FIELD-MARK keys not permitted in this field
0020	Function key not valid for right adjust field
0021	Data must be entered in this field.
0022	Status of field not known
0023	Hex Mode - Entry not valid

0024	Decimal Field - Entry Not Valid
0026	F-Key Entry Not Valid
0027	The key pressed is undefined and therefore cannot be used.
0029	Diacritic Character not valid.
0031	Data Buffer overflow
0032	MSR data error
0033	MSR data received was secured and this field was not specified for secured data.
0034	MSR data exceeds length of field. Data received from card exceeds length of field.
0035	MSR Error. Card incorrectly inserted or damaged.
0036	Cursor Select not allowed in field-exit required state.
0037	This is a non-selectable field - you've pressed cursor select.
0038	Light Pen and MSR Use Not Allowed.

0040 to 005F Communication Network Errors

Cause Code	Description and Suggested Recovery
0040	Modem or DCE is not ready or not functioning properly. Data Set Ready (DSR) Line Inactive (Model 01); DCE Not Ready (Model 02) This error indicates that the modem or DCE was not ready during required intervals of normal operation. The operating state of the modem or DCE is checked at different times, depending on the specific link-level protocol in use.
0041	Idle condition detected (X.25 only). This error indicates that the receive line was idle for 15 or more contiguous bit-times.
0042	Receive Clock Failure This error indicates that the receive clock signal became inactive during data transfer.
0044	30-Second Timeout (switched line only). Indicates that no valid data has been received for 30 seconds. The DTR signal goes inactive to disconnect the line
0045	DCE Will Not Activate (X.25 only) Indicates that either a Disconnect mode (DM) or a DISCONNECT (DISC) command was received during the link setup sequence.
0046	Frame Reject Received. The control unit received an FRMR from the network, indicating that an error was detected in the last frame transmitted. The error log entry of this code includes three sense bytes, which preserve the contents of the FRMR I-field.
0047	Unexpected Disconnect Mode (DM) or DISCONNECT (DISC) Command Received. Indicates that either a Disconnect mode (DM) or a DISCONNECT (DISC) command was received while in information transfer state.
0048	Unexpected Unnumbered Acknowledgment (UA) Frame Received. The control unit received a UA frame while in information transfer state.
0049	An SABME was received while the controller was in information transfer state.
0050	Ready For Sending (RFS) Error. This error occurs when either the RFS line is inactive for up to 30 seconds while the RTS line is active or the RFS line is active when the RTS line is inactive. (except during V.25 bis call establishment).
0051	Transmit Clock Failure. The transmit clock failed during a transmit operation.
0052	Transmit Hardware Error. The link adapter hardware failed to complete a transmit operation within 30 seconds, but no transmit clock or other DCE signal failure was detected.
0053	Expiration of Retry Count (X.25 only). No acknowledgment of a transmission was received within allowed timeout. (Timeout retry count (N2) and retry interval (T1) are specified in CSU Field 7)
0054	Frame Reject Sent. The control unit has sent a link-level FRMR response to the host system after receiving an invalid SDLC or LAPB command. Sense bytes S1, S2 and S3 preserve the contents of the FRMR I-field.

0060 to 0069 Ideographic Errors

0060	Ideographic or Bidirectional support error. Invalid data or key pressed. To correct error, press Error-Reset at the work station and if it is an Ideographic error, this field only accepts double-data characters--enter the correct data.
0061	Ideographic or Bidirectional support error. Invalid data or key pressed. To correct error, press Error-Reset at the work station and if it is an Ideographic error, this field only accepts alphanumeric data--enter the correct data.
0062	The cursor is not in position to change the data type. Press Error-Reset and re-attempt.
0063	Invalid Ideographic character entered in Alternate Entry mode. Press Error-Reset.
0064	The keyboard mode does not support the key pressed. Press Error-Reset.
0065	The cursor is in a column reserved for shift-out or shift-in characters. Press Error-Reset.
0066	This is not a data character and therefore, cannot be repeated. Press Error-reset.
0067	The workstation extension character RAM is full. Press Error-Reset.
0068	The output data stream to the 3030 is not valid for extension characters. Press Error-Reset.
0069	Ideographic or Bidirectional support error. Ideographic error--The extension characters to the 3030 are undefined; Bi-directional error--a terminating character cannot be inserted. Press Error-Reset.

0070 to 0078, Text Entry Assist Error Codes

If you are using the Display Write program and an error code in the range 0070 through 007F is displayed, refer to the following Text Entry Assist Error Code Chart for a detailed description of the problem and a suggested recovery action.

Text Entry Assist Error Code Chart

Error Code	Description and Suggested Recovery
0070	Word Wrap/Carrier Return Error. To recover - press the Error Reset key. For more information, press the Help key.
0071	Command Conflict. To recover - press the Error Reset key. Try the operation again when the operation in progress is complete.
0072	Key Not Valid For Cursor Position. To recover - press the Error Reset key. Move the cursor to the correct position and try again.
0073	Invalid Attempt To Delete. To recover - press the Error Reset key. Press the general prompt command key to delete or replace instruction and format change characters. For more information, press the Help key.
0074	Invalid Entry During General Prompt. To recover - press the Error Reset key
0075	Character Not Found. To recover - press the Error Reset key. Try the operation again when the operation in progress is complete.
0076	Continuous Insert Mode Failed . To recover - press the Error Reset key. Wait until the host system processes the text on the screen and try again.
0077	Function Key Selection Not Valid. To recover - press the Error Reset key.
0078	Required Scale Line Not Defined to Control Unit There is an error in the application program. No scale line is defined for this line.

0097 to 0099 Host Support Error Codes

Refer to the following chart if the error code displayed is in the range from 0097 through 0099.

***NOTE*:** When one of these codes is displayed, the required host support will not be available.

Host Support Error Code Chart

Error Code	Description and Suggested Recovery
0097	Test Request Function Not Supported. Contact host system operator and determine why the function is not supported.
0098	Undefined Hardware Error To recover - press the Error Reset key.
0099	Host Support Not Currently Available To recover - press the Error Reset key.

100000 to 101D00 X.25 Error Codes

When a keyboard entry error occurs while in X.25 Communication mode, a six-digit error code between 100000 and 10FFFF is displayed. Error codes along with a short description and suggested recovery action(s) are listed below:

For errors 100200 - check the system configuration. If the settings match, press the ***ERROR RESET*** key, check options and repeat the operation. Refer to Host Access Section for procedure on restarting communications. If this too fails, call your System Operator.

Error Code	Description and Suggested Recovery
100000	Previous CALL command in progress. Wait until the previous call is complete, or an error code other than 100000 is displayed.
100100	Virtual circuit already established. Wait for the virtual circuit to be detached before trying CALL/OPEN commands. It is possible to communicate over one virtual circuit at a time.
100200	ANSWER command entered for a PVC - Permanent Virtual Circuit`.
100300	CALL command entered for a PVC - Permanent Virtual Circuit
100400	Invalid logical channel ID. (Less than 3 characters long)
100500	Invalid logical channel ID. (Not a hexadecimal value between 001 and FFF).
100600	Invalid password. (More than 8 characters)
100700	Invalid Host Network Address. (TO network address exceeds 15 digits)
100800	Invalid Host Address. (FROM network address exceeds 15 digits)
100900	Invalid Host Network Address
100A00	Attempt to enter manual options or flow control negotiation from the keyboard with these parameters disabled.

100B00	Facility option entered incorrectly. (Characters entered are not hexadecimal - 0 through 9 or A through F)
100C00	Invalid packet window size option. (Less than 02)
100D00	Invalid packet window size option. (Greater than 07 with Modulo 8 specified)
100E00	Invalid packet window size option. (Greater than 15 with Modulo 128 specified)
100F00	Packet size not equal to 064, 128, 256 or 512.
101000	Invalid closed user group option. (Does not contain two decimal digits)
101100	Invalid control character entered.
101200	Host network address missing a CALL command.
101300	First control character (A, O, C or D) has already been entered.
101400	Network address was entered for a permanent virtual circuit (PVC).
101500	Password option was entered for a permanent virtual circuit (PVC)
101600	Invalid password option. (All not alphanumeric characters)
101800	Invalid password option. (All not alphanumeric characters)
101900	The Q or the E option was selected with the ANSWER command.
101A00	F or R control character entered for an ANSWER command or a PVC. [F=Facility; R=Reversed charging].
101B00	The Q or the E option was selected with the ANSWER command.
101C00	CALL entered for an answer-only SVC.
101D00	OPEN entered for an answer-only SVC

Appendix F

Glossary

API –- Application **P**rogram **I**nterface. An API is an Interface which is used for accessing an application or a service from a program. An API makes it possible to use programs from within programs, therefore it is the foundation for modular systems with clearly defined Interfaces between separate components.

Balun – (**BAL**anced **UN**balanced) A device that connects a balanced line to an unbalanced line; for example, a twisted pair to a twinaxial cable.

CPI – Characters **Per I**nch

Daisy chain – Twinaxial connected devices may be daisy-chained together. The last device further in the chain from the host must terminate the line so that the signal goes back to the host. Most T-cables auto terminate. When using baluns you can not daisy chain.

Emulator - A program that allows a computer to act like a (particular brand of) terminal, e.g. a vt-100. The computer thus appears as a terminal to the host computer and accepts the same escape sequences for functions such as cursor positioning and clearing the screen.

ETU – **E**mulator **T**ransfer **U**tility. This is a file transfer program that is installed on a IBM midrange host, such as the AS/400 or Advanced System/36. http://www.ringdale.com

Font -- a set of characters that has the same typeface, style (italic, bold, etc.) and size (10,12, 24, etc.).

HLLAPI – **H**igh **L**evel **L**anguage **A**pplication **P**rogram **I**nterface. An IBM programming interface that allows a PC application to communicate with a midrange application. The hardware hookup is handled via normal micro to midrange 5250 emulation.

HotSpot – This is an area on the screen this is linked to a specific command or menu for that specific screen so that you can activate the command or menu by clicking on it.

INF - (INFormation file) A Windows file that contains installation information.

LPI – **L**ines **P**er **I**nch

Midrange host -- In general, midrange refers to computers that are more powerful and capable than personal computers but less powerful and capable than mainframe computers.

Monospaced -- A type font where all characters have the same width.

PAPI – Microsoft uses the **P**rinter **A**pplication **P**rogram **I**nterface to format printer data for a specific printer using the INF for that printer.

OCL -- Object Constraint Language is an expression language that can be used to define expressions in object oriented models. These expressions enrich the respective model with precise and unambiguous annotations, thus preserving precious information about the underlying business domain.

PCI -- (**P**eripheral **C**omponent **I**nterconnect) The most widely used I/O bus (peripheral bus). Used in computers of all sizes, it provides a shared data path between the CPU and peripheral controllers, such as network, display, SCSI and RAID cards. However, with so many controller circuits built into the motherboard, the need for vacant PCI slots in a PC has diminished considerably.

PCL -- **P**rinter **C**ontrol **L**anguage developed by Hewlett Packard and used in many of their laser and inkjet printers. Printer Control Language (PCL) is a language (a set of command codes) that enables applications to control Hewlett-Packard DeskJet, LaserJet, and other HP printers. Today, most computers have only PCI slots along with one AGP or one PCI Express slot for the display adapter.

SCS – **S**NA **C**haracter **S**et is the print control language that IBM printers use.

T-cable - self-terminating twinax connector cable that connects to the adapter's15-pin female DB connector.

TDLC – Twinax **D**ata **L**ink **C**ontrol.

TTF - TrueType Font – A scalable font technology that renders fonts for both the printer and the screen.

Unlike PostScript and other font technologies, in which the rendering algorithms are maintained in the rasterizing engine, each TrueType font contains its own algorithms for converting the outline into bitmaps. The lower-level language embedded within the TrueType font allows unlimited flexibility in the design.

TVD – Telnet **V**irtual **D**evice. This is a Display Emulator session. The TVD file contains the properties.

TVP – Telnet **V**irtual **P**rinter. This is a Printer Emulator session. The TVP file contains the properties.

Twinaxial cable - Abbreviated as twinax, a twinaxial cable is a cable with three conductors. Two conductors are insulated wires in the center of the cable. The other conductor surrounds the first two conductors and a layer of insulation separates them. Typically, twinax is used to connect AS/400 or System/36 computers with its devices.

Twinax Controller – Twinax devices are attached to a controller. This may on the host, or on a remote controller, for example an IBM 5494 Remote Controller.

Twinax Port – Each twinax cable is attached to a port on the twinax controller. This may be at the back of the host, a remote controller, or on a twinax brick. They are numbered starting at port 00.

WSA – **W**ork**s**tation **A**ddress is the physical address (or addresses) assigned to each device that is connected to a Twinaxial port. There are seven addresses on a Twinaxial port and they range from 0 to 6. Also referred to as the host address.

Appendix G

Technical Support

Ringdale, Inc.
101 Halmar Cove
Georgetown, Texas 78638
Tel: 1-888-288-9080 or 1-512-288-9080
FAX: 1-512-826-2621
http://www.nlynx.com
http://www.ringdale.com

Before you call:

Please have the following information ready:

- ✓ Your contact information.
- ✓ Serial number of the adapter card. This is located on the card guide where you can see it from the back of the PC.
- ✓ Cursor position, upper right, upper left, dancing terminal.
- ✓ The symptoms of the problem.
    - o Does not work at all or intermittent?
    - o AS/400 or System 36?
    - o Certain application?
- ✓ History of the Problem:
    - o Did the device work for a period of time or fail immediately after installation?
    - o Was any PC option changed (hardware or software) prior to the problem appearing?

Address manual comments to:

Ringdale Inc.
Technical Support
101 Halmar Cove
Georgetown, Texas 78628
888-288-9080
www.ringdale.com
support@ringdale.com

Appendix H

ES/PCI Limited Warranty

General Terms and Conditions

Limited Product Warranty. Ringdale, Inc. warrants that for one year the PCI Hardware Product shall be free from defects in materials and workmanship that arise under proper and normal use and service. In the event the PCI Hardware Product fails to comply with the warranty set forth above, Ringdale, Inc. will replace or repair the Product. End User must, however, return the Hardware Product, along with proof of purchase, to Ringdale, Inc.

Software Warranty. Ringdale, Inc. warrants that for a period of ninety (90) days from the date of purchase by the End User, its Software Products shall conform to its published specifications under normal usage. RINGDALE, INC. DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR FREE, OR THAT ALL SOFTWARE DEFECTS WILL BE CORRECTED. In the event a Software Product fails to comply with the warranty set forth above, Ringdale, Inc. will replace the product. End User must, however, return all copies of the Software, along with proof of purchase, to Ringdale, Inc. within 90 days from the Software purchase date.

Warranty Limitations. End User's sole remedy under any Warranty provided by Ringdale, Inc. shall be limited to the replacement or repair of the Product, or at Ringdale, Inc. 's sole discretion, a refund of the purchase price. The End User shall pay transportation costs in connection with the return of any Product to and from Ringdale, Inc.'s plant. RINGDALE, INC. GRANTS NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN THE WARRANTIES STATED ABOVE. EXPRESSLY EXCLUDED ARE THE IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RINGDALE, INC. BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS INCURRED AS A RESULT OF THE USE OF ANY RINGDALE, INC. PRODUCT, WHETHER OR NOT USED IN ACCORDANCE WITH INSTRUCTIONS.